

JPRS-UBB-84-010

18 May 1984

USSR Report

LIFE SCIENCES

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SYMPOSIUM ON ENTOMOPHAGES

Moscow ZASHCHITA RASTENIY in Russian No 7, Jul 83 p 62

YEREMENKO, A. P. VASKhNIL Plant Protection Department

[Abstract] The author presents a 600-word report on an All-Union symposium (on theoretical questions in the use of entomophages) held 25-27 January 1983 in Leningrad, organized by the All-Union Scientific Research Institute of Plant Protection, the VASKhNIL Plant Protection Department Biological Methods Section, and the USSR National Group participating in the activities of MOBB [expansion unknown]. The symposium was opened by VASKhNIL academician Yu. N. Fadeyev, president of the VPS MOBB [expansion unknown]. VASKhNIL corresponding member N. V. Bondarenko (Leningrad Agricultural Institute) presented a report on criteria in selecting pest antagonists. Chairman of the VASKhNIL Commission on Entomophages G. V. Gusev presented a report on the biological bases for the use of entomophages and their mass culture and the effect of climatic conditions on insect populations. V. I. Tobias (USSR Academy of Sciences Zoological Institute) talked about predicting results from the use of entomophages in plant protection. V. A. Tryapitsyn and Ye. S. Sugonyayev (USSR Academy of Sciences Zoological Institute) discussed the penetration of entomophages and their hosts into new zoogeographic areas. The biocenotic links between the Hymenoptera families of Eurytomids and problems of their practical use were considered by M. D. Zerova (Ukrainian Zoological Institute). G. N. Makarenko and Ye. Ya. Shuakhina (All-Union Institute of Plant Protection) and I. A. Ponomareva (All-Union Scientific Research Institute of Phytopathology) examined questions of the quality of Chrysopidae populations in mass culture. N. V. Voroshilov (All-Union Institute of Plant Protection) considered theoretical prerequisites for genetic improvement of entomophages. The use of Trichogramma in agriculture was discussed by A. M. Grinberg (All-Union Scientific Research Institute of Plant Protection Methods). Z. S. Murashevskaya (All-Union Institute of Plant Protection) analyzed the behavior of Trichogramma, and G. N. Tsybul'skaya (Ukrainian Scientific Research Institute of Plant Protection) covered the problem of using entomophages to deal with cutworm on sugar beet. A. F. Rusnak (All-Union Scientific Research Institute of Plant Protection Methods) discussed the structure of hybridization on the relationship of the sexes in Scelionidae. No references.

[326-9642]

URGENT QUESTIONS IN GRAIN CROP PROTECTION

Moscow ZASHCHITA RASTENIY in Russian No 3, Mar 83 pp 4-6

UNNAMED CORRESPONDENT

[Abstract] A series of interviews is presented with individuals who participated in an exhibition and seminar "Protecting Agricultural Crops from Pests and Disease" which took place in December 1982 in the Kazakh SSR Exhibition of National Economic Achievements under the auspices of the VASKhNIL Eastern Department. The main emphasis at the seminar was on grain crop protection. The following persons were interviewed: E. F. Gossen, deputy chairman of the VASKhNIL Eastern Department Presidium (plant protection statistics for Kazakhstan, the use of herbicides on grain crops, prospects for use of biological methods of plant protection); T. N. Nurmuratov, director of the Kazakh Scientific Research Institute of Plant Protection [NIIZR] (grain protection methods, ecological problems, sugar beet protection, biological methods of plant protection); N. Ya Yevdokimov, Kazakh NIIZR section chief (grain protection statistics, use of mixed pesticides, grain losses caused by pests); V. K. Azhbenov, Kazakh NIIZR senior scientific associate (prediction of crop damage, land zoning); M. K. Koyshibayev, Kazakh NIIZR senior scientific associate (disease control for grain crops, rust diseases, root mold); A. G. Georgiadi, Kazakh NIIZR senior scientific association (protection of corn from pests and disease, smut problems, use of herbicides); A. K. Tolebayev, Kazakh NIIZR section chief (rodent problems, chemical protection against rodents); Zh M. Tyurekhodzhayev, Kazakh NIIZR senior scientific associate (crop damage caused by sparrows). No references.
[327-9642]

CONFERENCE ON IMMUNITY

Moscow ZASHCHITA RASTENIY in Russian No 3, Mar 83 pp 40-41

KIRYUKHINA, R. I. and GUSEVA, N. N. VASKhNIL Plant Protection Department; All-Union Scientific Research Institute of Plant Protection

[Abstract] The authors present an 800-word report on a coordination conference on plant immunity which took place in Riga in October 1982, attended by 40 people from 18 institutions. Ya. A. Tsirtsens, the director of the Baltic branch of the All-Union Institute of Plant Protection, opened the conference. One of the authors (Guseva) presented an accountability report on work conducted on plant immunity during the first 2 years of the 11th Five-Year Plan, which is summarized. Z. Ya. Zotova of the All-Union Scientific Research Institute of Fodder presented a report on immunity in fodder crops. The following also

spoke at the conference: O. L. Rudakov, L. P. Semenova and M. Ye. Sinigovets, all of the All-Union Scientific Research Institute of Phytopathology (rust disease in cereal crops); V. G. Novokhatka (Mironovka Scientific Research Institute of Wheat Selection and Seed Growing: need for new resistance donors for wheat selection); A. M. Ovchinnikova (All-Union Scientific Research Institute of Legumes and Groats: methods for variety evaluation); N. M. Korneychuk (Ukrainian Scientific Research Institute of Agriculture: research on white and yellow lupine); M. V. Orekhovskaya (All-Union Scientific Research Institute of Vegetable Selection and Seed Growing: methods for determining vegetable resistance to various diseases); Ye. M. Obukhovich (Belorussian Scientific Research Institute of Agriculture: laboratory work on disease resistance); I. P. Petrauskas (Lithuanian Scientific Research Institute of Agriculture: disease resistance in fodder crops, cereals and legumes); O. I. Treykale (Baltic branch of the All-Union Scientific Research Institute of Plant Protection: clover research); N. N. Gracheva (Moscow branch of All-Union Scientific Research Institute of Plant Growing: fast methods for evaluating resistance in plants); G. G. Yefimov (All-Union Scientific Research Institute of Plant Protection: disease resistance in potatoes). The conference also considered a terminology listing of 211 words proposed by A. P. Dmitriyev (All-Union Scientific Research Institute of Plant Protection). No references. [327-9642]

UDC 633.88:582.998:631.531.173.4

EFFECT OF GAMMA RAY EXPOSURE OF SEEDS OF BIDENS TRIPARTITA L ON PRODUCTIVITY AND ACCUMULATION OF BIOLOGICALLY ACTIVE SUBSTANCES

Leningrad RASTITEL'NYYE RESURSY in Russian Vol 19, No 4, Oct-Dec 83
(manuscript received 14 Jun 82) pp 516-520

BEN'KO, G. N., Leningrad Pediatric Medical Institute

[Abstract] The bur-marigold *Bidens tripartita* L is an annual medicinal herb of the Compositae family used to treat diathesis, scrofulosis and psoriasis and as a diuretic. The authors studied the effect of gamma-ray treatment on plant development and accumulation of such biologically active substances as flavonoids, coumarins, carotinoids and ascorbic acid. Doses were 0.5, 1, 2 and 4 kilorads; seeds were planted in 1977, 1979 and 1980. Results showed marked acceleration of plant growth at 0.5 and 1 kilorads in 1977, while the maximum effect was with 1 or 2 kilorads in 1979 and with 1 kilorad in 1980. These differences were apparently related to varying times of sowing after irradiation. Branching and overall phytomass productivity were also enhanced, with the highest quantity of, for example, xanthophylls in plants from seeds irradiated with 1 or 2 kilorads. Flavonoid synthesis was boosted most by 2, and especially 4, kilorad dosages, with 18% increases in flavonoids in leaves. References 11 (Russian). [375-12131]

EFFECTS OF JUVENILE HORMONE ANALOG ON SPERMATOGENESIS IN STINK-BUG
(EURYGASTER INTEGRICEPS)

Moscow ZOOLOGICHESKIY ZHURNAL in Russian Vol 63, No 1, Jan 84
(manuscript received 12 Jul 82) pp 47-52

SHINYAYEVA, L. I., All-Union Scientific Research Institute of Plant
Protection, Pushkin, Leningrad

[Abstract] Studies were conducted on the effects of an analog of the juvenile hormone, 1-(4-chlorophenoxy)-6,7-epoxy-dimethyl-2-octene, on various gonadal tissues and spermatogenesis of the stink-bug (*Eurygaster integriceps*) larva. Histological analysis of the tissues demonstrated that topical application of 0.2-200 µg of the analog to the abdomen during the Vth instar was without effect on spermatogenesis or the gametes. The differences in the susceptibility to the analog of the somatic and gametic cells indicates that hormone application should be timed to phases of active gametogenesis, rather than to developmental larval stages when evaluating the effects of hormones on spermatogenesis. Figures 1; references 9: 3 Russian, 6 Western.
[364-12172]

UDC 591.342.5:591.133

FUNCTION OF MOUTHPART AND ANTENNA CHEMORECEPTORS IN CATERPILLAR FEEDING
RESPONSE

Moscow ZOOLOGICHESKIY ZHURNAL in Russian Vol 63, No 1, Jan 84
(manuscript received 15 Nov 82) pp 62-68

REMOROV, V. V., Soil Biology Faculty, Leningrad State University

[Abstract] The role of chemoreceptors on mouthparts and antennae in the feeding response of the cutworm (*Agrotis segetum*) and the moths *Phragmatobia fuliginosa* and *Deilephila elpenor* to nutrient attractants and repellants (seeds and leaves) was investigated by ablation of the receptors, or their inactivation by concentrated hydrochloric acid. Within each species feeding response was predicted on certain receptors in a well-defined area: in the cutworm on the chemoreceptors of the maxilla and the upper lip, in the *Phragmatobia fuliginosa* on the maxillary chemoreceptors, and in *Deilephila elpenor* on the chemoreceptors on the maxilla, upper lip, and the antennae. Ablation of certain of these receptors resulted in their function being taken over by other chemoreceptors that initially appeared to be of secondary importance vis-a-vis the primary chemoreceptors. None of the chemoreceptor

groups were functionally inflexible, but their overall activity depended on interaction with other receptors in determining response to edible and inedible feeds. However, hydrochloric acid inactivation appeared to be irreversible. Figures 2; references 11: 2 Russian, 9 Western.

[364-12172]

INCREASED EFFECTIVENESS IN PLANT PROTECTION

Moscow ZASHCHITA RASTENIY in Russian No 6, Jun 83 pp 2-9

No Author Report

[Abstract] An All-Union Seminar was held in March on the topic "Problems in Plant Protection and Measures Undertaken to Increase its Effectiveness." In attendance were many directors of Republic, State and Regional protective services, many scientists and experts. The theme of this seminar stressed that further improvements in agricultural yields must involve pest and weed control measures. One of the effective grain protective measures being expanded in recent years is grain digestion with various chemicals and the use of protective film coverings. The range of topics covered includes grain cultures, vegetables and fruit producing plants. Stress was placed on preventive measures applied prior to development of massive problems, using a multitargeted approach rather than specific control of individual problems. Attention is directed to environmental protection in light of an ever-increasing assortment of chemicals. Quality control, especially of the agents stored for long periods needs special attention. Introduction of biological agents and pheromones should open new methods to control agricultural pests. Diagnostic measures should be expanded to provide early warning and finally, mathematical modeling should be developed for prognostic and planning purposes. Figures 9.

[342-7813]

INCREASED GRAIN PRODUCTION

Moscow ZASHCHITA RASTENIY in Russian No 6, Jun 83 pp 14-15

GOSSEN, E. F., Vice-Chairman of the Presidium of Far-Eastern Branch of VASKhNIL, Lenin Prize Laureate

[Abstract] Increased production of grain requires development of new methods to increase soil productivity, protection against soil erosion, weed control and preventive measures against various pests and diseases. All of the measures developed at scientific centers are applied extremely slowly due to the lack of technology, resistance

of the administrators, etc. Other problems concern extensive weed levels on the grain fields and difficulties in controlling them. The most effective herbicides for several grain cultures are reviewed. It was calculated that for each ruble spent on plant protection, a 4-10 fold saving could be realized in the yield of the crop. Figure 1. [342-7813]

UDC 632.915:633.1

PRINCIPAL PROBLEMS IN PROTECTION OF GRAIN CULTURES

Moscow ZASHCHITA RASTENIY in Russian No 6, Jun 83 pp 16-20

ARESHNIKOV, B. A., Laboratory Director of Ukrainian Scientific Research Institute of Plant Protection

[Abstract] One of the important means of increasing grain production is protection of fields from pests and insects which destroy the grain harvest and lower its quality. There are limited protective measures against individual pests which do not provide adequate overall protection. The task at hand is to develop integrated protective measures against multiple agents affecting grain cultures. A number of protective activities are reviewed. Agrotechnical measures include crop rotation, optimized seeding, proper watering and balanced fertilization. Genetic breeding of resistant brands is one of the most effective ways of controlling various pests. Biological measures are promising but need more development. When the variety and quantity of insects becomes too large to handle by above methods, chemical measures are applied. A number of variables must be considered to optimize their use: treatment schedule, variety of insecticides and a combined approach using expertise of entomologists, phytopathologists, herbidologists and other experts in protection of grain cultures. [342-7813]

UDC 632.936.2

PHEROMONE BASED MOTH CONTROL

Moscow ZASHCHITA RASTENIY in Russian No 6, Jun 83 pp 22-24

GRICHANOV, I. Ya., aspirant, All-Union Institute of Plant Protection

[Abstract] Identification of sex attractants (pheromones) of various insects and the development of methods to synthesize their analogues made it possible to use these agents in controlling various pests. In the present paper a review of three aspects of pest control are

presented: population surveys, mass capture of males and their disorientation. The last method appeared to be the most promising one for massive application. Mass capture could be effective only during low levels of pest infection. The reported work on male disorientation is exclusively of foreign origin. In the Soviet Union, methods for male disorientation are only under development for application to cabbage, cotton and winter moth. Figure 1.
[342-7813]

UDC 581.192.7:581.112

PHYSIOLOGICALLY ACTIVE COMPOUNDS AND TRANSPORT PROCESSES IN PLANTS

Kiev FIZIOLOGIYA I BIOKHIMIYA KUL'TURNYKH RASTENIY in Russian
Vol 15, No 3, May-Jun 83 (manuscript received 23 Nov 82) pp 211-222

NIZHKO, V. F., Institute of Plant Physiology, Ukrainian SSR Academy of Sciences, Kiev

[Abstract] A literature review is presented of the regulatory role of a number of physiologically active compounds (phytohormones, phenols, saponins, phytotoxins) in the uptake and active transport of various ions, water, and organic compounds in plants. The mechanisms of action of these regulatory compounds are discussed in relation to their effects on membrane permeability and functional efficiency of ion pumps and enzymes in active uptake of nutrients and their transport within and between tissues and organs. Appreciation of the mechanism of action of known regulators will facilitate search for novel compounds that may have usefulness in plant breeding and crop improvement in the future. References 142: 1 Czech, 24 Russian, 117 Western.
[383-12172]

BIOTECHNOLOGY

"ELLIPS-MIKROBIOLOGIYA" INFORMATION SYSTEM: RESULTS OF EXPERIMENT

Moscow EKONOMIKA I MATEMATICHESKIYE METODY in Russian Vol 19, No 5,
Sep-Oct 83 (manuscript received 10 Dec 82) pp 927-928

YEZHOV, E. V., Moscow

[Abstract] Progress of development and experimental testing of the "Ellips-Micobiologiya" information system, carried out at the All-Union Scientific Research Institute of Bioengineering, are described and discussed. The ELLIPS was designed to provide an information system to meet the needs of specialists of the microbiology industry. The system now can perform basic functions and is backed up by adequate software. The turn-around time is satisfactory but should be reduced as soon as possible. The system supplies full text information, while provision of tabular data is yet to be perfected. The system provides adequate protection from error and has been recommended for experimental use. References 2 (Russian).
[344-2791]

ENVIRONMENT

BAIKAL'S PURE WATER

Moscow TASS in English 22 Jan 84

[Text] Industrial enterprises of a young city that has sprung up on the shore of Lake Baikal will not damage this unique reservoir of fresh water (which amounts to a fifth of world reserves). A system of biological treatment of industrial effluents, capable of filtering not less than 5,000 cubic meters a day, has been assembled in the city of Severobaikalsk. More than twenty kilometers of pipes of various diameter have been laid under inhabited districts and future housing developments of the city. Fifteen years ago, the Soviet Council of Ministers, taking into account future economic development of the Baikal zone, adopted a resolution on protection of the lake in whose crystal-pure water live 1,500 species of rare plants and animals.

CSO: 1852/08

LIMITATIONS DUE TO LIGHT REFRACTION SUPERIMPOSED ON HOLOGRAPHIC INTERFEROMETRY OF STRATIFIED FLUIDS

Moscow OKEANOLOGIYA in Russian Vol 23, No 2, Mar-Apr 83
(manuscript received 12 Aug 81, after revision 19 Apr 82) pp 348-350

VOROPAYEV, S. I., GAVRILIN, B.L. and ZHMUR, V. V., Institute of Oceanology imeni P. P. Shirshov, USSR Academy of Sciences, Moscow

[Abstract] One of the optical methods used in laboratory investigations of the processes occurring in density gradient liquids is holographic interferometry. The principles of this technology are discussed and the calculation of measurement error worked out. Using the formulae derived, it was shown that in some cases the relative error due to light refraction measurement could be quite high, exceeding 30%. References 6: 2 Russian, 4 Western.
[399-7813]

DETERMINATION OF CROSS-SECTION OF SOUND BACK SCATTER FROM SMALL PELAGIC OBJECTS IN AGGREGATIONS

Moscow OKEANOLOGIYA in Russian Vol 23, No 2, Mar-Apr 83
(manuscript received 29 July 81, after revision 3 Mar 82) pp 351-354

ARTEMOV, A. G.

[Abstract] Evaluation of average cross-section of back scatter from individual animals was described based on the coefficient of volume back scatter of aggregates with known density in situ. Coefficient of back scatter from real aggregates was determined by means of a calibrated trawl sound probe and an echo-integrator. Field studies performed in the Black Sea on several species of fish gave values somewhat below those determined by the standard back scatter method obtained from the back side of the fish. References 7: 5 Russian, 2 Western.
[399-7813]

BAT FLIGHT RANGE IN TRANS-VOLGA SEMI-ARID REGIONS WITH CLAY SOIL

Moscow BYULLETEN' MOSKOVSKOGO OBSHCHESTVA ISPYTATELEY PRIRODY.
OTDEL BIOLOGICHESKIY Vol 88, No 4, Jul-Aug 83 (manuscript received
14 Jan 82) pp 88-90

LINDEMAN, G. V. and SUBBOTIN, A. Ye.

[Abstract] Little precise information has been gathered on the seasonal migrations of bats in the Trans-Volga and Ural regions. Sightings or evidence prior to 1964 were sketchy and of poor accuracy. The authors made observations at the Dzhanybek station of the USSR Academy of Sciences Laboratory for Forest Research and in the Dzhanybek settlement, Ural Oblast. During summer no sightings were recorded; small numbers of *V. murinus* and *N. noctula* were sighted in spring and fall. These and other species multiply chiefly in the forest zone north of the area of observations, and in one case (*N. noctula*) only males were seen. *P. kuhli* may perhaps summer farther north than is currently known. References 9 (Russian).
[393-12131]

DISTRIBUTION AND BEHAVIOR OF COMMON SPECIES OF CRYOPELAGIC FAUNA UNDER DRIFTING ARCTIC ICE

Moscow ZOOLOGICHESKIY ZHURNAL in Russian Vol 63, No 1, Jan 84
(manuscript received 25 Nov 82) pp 16-21

MEL'NIKOV, I. A., Institute of Oceanology, USSR Academy of Sciences, Moscow

[Abstract] Distribution and behavior of some common species of cryopelagic fauna beneath drifting Arctic ice were assessed on the basis of data collected by scuba divers from drifting stations SP-22, SP-23 and SP-24 in the Central Arctic basin between 1977 and 1980. Using the amphipod *Parathemisto libellula* as a model species, the studies showed that the distribution patterns were largely predicated on perennial ice floes. Evaluation of the data for this species and others indicated that the underwater topographic features of the ice and subglacial currents create conditions leading to shoal accumulation of crustaceans at the ice-water interface. These observations pertained essentially to the larger representatives of the cryopelagic fauna readily assessed visually during underwater exploration. Vertical migrations and extent of such movements are determined by the season and the snow and ice cover. Figures 1; references 17: 11 Russian, 6 Western.
[364-12172]

UDC 616.9-022.39-084(571.1./6)

MODERN PREVENTIVE MEASURES FOR ZONOTIC INFECTIONS

Moscow ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII
in Russian No 10, 1983 pp 97-99

[Article by V. P. Sergiyev, K. A. Kuznetsova, Ye. B. Teslenko, and
V. P. Popov (Moscow)]

[Text] Soviet public health has achieved successes in the field of study and prophylaxis for infectious diseases. As a result of the implementation of epidemiologic control for a number of especially dangerous infections, the attack rate of these diseases is constantly declining in the country. Goal-oriented and timely measures are being conducted to prevent illness, and to increase sanitary-instructive work among the population.

However, unresolved tasks remain related to the study of a complex group of especially dangerous and zoonotic infections which require the development of diagnostic methods and improvement of prophylactic measures.

According to WHO data, at the present time more than 150 diseases have been identified which are widely disseminated in the world and which affect both man and animals (rabies, brucellosis, tularemia, leptospirosis, anthrax, etc.).

The fight against zoonoses is being conducted both on a national level by individual governments and by international organizations (WHO, FAO [Food and Agriculture Organization of the United Nations]). The Soviet Union supports international collaboration for this problem within the framework of WHO and is prepared to make a constructive contribution to its development. Referral centers for separate nosological forms (plague, rickettsiosis, brucellosis, leptospirosis, etc.) as well as indigenously located and zoonotic infections have been created in the USSR in collaboration with WHO, thereby assisting the implementation of global programs.

The tasks of the referral centers include training specialists in the areas of clinical symptoms, diagnosis and prophylaxis, developing methods to study diseases, widening the scope of the battle against these diseases, offering consultative and practical aid to interested countries, providing diagnostic compounds, etc.

The level of development of public health, as well as the accumulated practical experience ranks the Soviet Union among those countries which have the capacity to train national cadres of a wide profile, to instruct foreign specialists at work locations, to exchange scientific achievements, and to offer aid to socialist and developing countries.

An example of this kind of public health aid is the Soviet-Mongolian collaboration, started 20 years ago. Particularly important achievements have been made in studying indigenous loci of diseases in the joining territories of the USSR and Mongolian Peoples Republic, in conducting epizootologic inspections and prophylactic measures, and in organizing long-term observations.

In recent years, the international significance of all socialist countries in the development and implementation of regional programs in zoonoses has grown. Only in socialism is the problem of health maintenance of the population transformed into the most important social task of government. Its solution depends on the coordinated work of various sections of the governmental mechanism, but the effectiveness of the conducted prophylactic measures depends on clear-cut planning and rapid introduction into practice of the results of scientific-investigative studies.

Since 1981, an interdepartmental program for zoonoses, planned for the five-year period and initially developed by the USSR Ministry of Health, the USSR Ministry of Agriculture, the USSR Academy of Medical Sciences and the All-Union Order of Lenin Academy of Agricultural Sciences imeni V. I. Lenin, has been in effect. The program calls for the introduction of new methods and improvement of existing methods for specific diagnosis and treatment of brucellosis, anthrax, rabies, leptospirosis, listeriosis, and Q fever. To monitor implementation of scientific-investigative works in the period of 1981-1985, an interdepartmental coordinating council has been created to coordinate the work of specialists in different disciplines.

More than 50 institutes participate in the implementation of complex investigations, an important role in which is assumed by antiplague institutes of the USSR Ministry of Health. Considering the urgency of the problem of zoonotic infections, antiplague institutes have been included in future plans for scientific-investigative studies of the 11th Five-Year Plan, developed to study the mechanisms of how disease pathogens are retained in indigenous loci, the dynamics of the epizootic process, and the epidemiology of zoonoses in conditions of increased anthropogenic action in indigenous loci. The plans covered

questions of how to improve the technology for preparation of bacterial samples, the equipment needed to produce new and modern facilities, standardization of samples, and development of new methods for their control.

The introduction by Soviet specialists of serological methods for diagnosis has demonstrated the high degree of their command of information and their effectiveness in assessing the epizootic situation during inspection of indigenous loci of infection. However, for future widespread introduction of modern diagnostic methods, it will be necessary to solve a number of practical problems. Of first priority is the need to improve existing methods, to increase their specificity, sensitivity and standardization, to train specialists in the techniques of running modern serologic tests, and to develop a differentiated approach for utilization of methods in various geographic regions in coordination with seasonal needs and species-related differences of rodents.

The assimilation of molecular-genetic and new immunologic methods has allowed scientists to find solutions for complex questions regarding immunologic mechanisms and immunoprophylaxis for especially dangerous and zoonotic infections, and to identify the L-form of microbes as the form which activates pathogens in disadvantageous conditions.

One of the primary tasks of improving immunoprophylaxis is the study of the effectiveness of various vaccines and how to apply them. The major goal is to identify those preparations which create an intensified and prolonged immunity, given a decrease in the frequency of vaccine administration by means of using non-specific stimulators for immunogenesis.

The possibility of immunization with combined vaccines against several pathogens of especially dangerous infections is one of the most promising directions in immunoprophylaxis. Since 1955, multi-sided experimental studies of live vaccines with different combinations of antigens have been in progress. Currently, studies are being conducted on combined di- and tri-vaccines against plague, tularemia and anthrax, using needleless injection. Much attention in this area has been directed to defining the criteria for the safety of such vaccination.

In progress at antiplague centers are virologic investigations to identify loci of virus infection and the zones of increased risk of infection for people. The introduction of virologic methods has presented possibilities for more in-depth study of field material, and the understanding of diseases with previously unidentified etiologies.

In response to the resolutions of the May (1982) Plenum of the CPSU Central Committee for sanitary-prophylactic and antiplague institutes, a complex of measures was outlined to decrease expenditures for food sources used for technical needs, to search for and introduce into

practice inexpensive synthetic substitutes for erythrocytologic diagnostics and substitutes for decoy products from food sources, and to search for non-food protein sources. Methods have been approved to substitute meat products with casein and with coagulated blood (wastes of milk and whey production). A more widespread use has been found for products of microbiological production (nutrient yeasts and enzymes of microbial origin). Reduction of expenditures for food sources has also occurred as a result of a decrease in their loss due to the storage and shipment of fodder for laboratory animals and the carrying out of planned studies on regulating the number of rodents and loci of infections.

In recent years, the primary focus of antiplague measures in large areas of disease loci territories has become field disinfection, allowing scientists to obtain a constant antiparasitic and antiepzootic effect. This method of attack has a less damaging effect on the surrounding environment and animal world. Field disinfection plays a leading role in long-term programs for sanitation, developed for the Central-Caucasus and Tuva (Saglinsk mesocenter) loci of plague.

The sanitation of indigenous loci for plague by the method of thorough disinfection is being conducted at the Kirgiz antiplague center. For the past 11 years, this territory with an area of more than 1.5 million hectares has been sanitized with a good antiepzootic effect. Since 1983, the Azerbaijan antiplague center has planned to begin sanitation of the Apsheronsk section of disinfection of the burrows of *Dasychira*, found in sandstone.

To solve the problem of manpower reserves and replacement of labor-intensive ineffective manual labor, especially in extreme conditions of the desert, scientists have equipped antiplague and certain sanitary-epidemiologic stations with new disinfection technology (disinfecting antiplague automobile ADP-66, hand-sprayer OR-1).

With the aim of preserving nature and valuable animal forms which participate in the circulation of plague pathogens, in the Tyan-Shan indigenous loci for plague, experimental studies are being conducted on the epizootologic inspection of territories using a serologic method of taking blood and ectoparasites from woodchucks inactivated with ditelin.

The planned wide-scale realization of prophylaxis for zoonotic and other especially dangerous infections, mainly in regions and zones of intensification of agricultural production is one area of participation by workers at antiplague and sanitary-epidemiologic centers in the realization of the USSR Food Program. For this goal, a wide spectrum of scientific investigations are planned by and carried out at scientific-investigative antiplague institutes and at antiplague centers of the USSR Ministry of Health.

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9139

CSO: 8144/0968

CLINICAL-EPIDEMIOLOGICAL CHARACTERISTICS OF BOTULISM IN RECENT YEARS

Alma-Ata ZDRAVOOKHRANENIYE KAZAKHSTANA in Russian No 12, Dec 83 pp 50-52

DMITROVSKAYA, T. I., DOSABAYEVA, M.A., KUDRYAKOVA, L.V., MIZYAKINA, Ye. A., MILANOVA, A. S. and MUSABAYEV, M. Kh., Chair of Infectious Diseases (Director-Professor T. I. Dmitrovskaya), Alma-Ata Institute for the Advanced Training of Physicians

[Abstract] Starting in 1963, botulism began to be systematically registered. The course of this disease could be classified as acute, moderate and light, roughly one-third of each type. Detailed clinical symptoms and percent of occurrence were reported for each type. In general, a five-fold incidence increase was noted in 1967-1976 as compared to the preceding decade. Acute course was characterized by a short incubation period, serious neurological disorders, slurred speech, difficulty in swallowing and respiratory problems. With decreasing severity of the disease, the incubation period increased and the symptoms became gradually lighter. Reference 1 (Russian). [371-7813]

UDC 599.323.4

SENSITIVITY TO TULAREMIA INFECTION IN CERTAIN SPECIES OF MICROTUS IN EASTERN SIBERIA AND FAR EAST

Moscow BYULLETEN' MOSKOVSKOGO OBSHCHESTVA ISPYTATELEY PRIRODY. OTDEL BIOLOGICHESKIY Vol 88, No 4, Jul-Aug 83 (manuscript received 27 Jun 82 pp 84-88)

OLSUF'YEV, N. G., SHLYGINA, K.M., KOVAL'SKAYA, Uu. M. and BARANOVSKIY, P. M.

[Abstract] The common microtus genus of field mice in Eastern Siberia and the Far East varies widely in susceptibility to tularemia. The authors studied *M. fortis*, found in the southern part of Eastern Siberia and the Far East, and *M. maximowiczii*, weighing 48-97 grams, by administering 10-100 and 1000 microbe cell doses and determining mortality. All *M. fortis* succumbed in the 5-13 day period with typical acute pathological and anatomical changes; meanwhile, only part of the *M. maximowiczii* died: 3 of 11 of chromosome type B and 4 of 10 of type V. Autopsies showed the pathogen to be present only in the spleens of the mice that succumbed. Survivors continued to eliminate the pathogen in urine for 3 months after infection, so that these mice were carriers of the disease to more sensitive species. References 6 (Russian). [393-12131]

UDC 576.895.771(571.63)

AEDFS (EDWARDSAEDES) BEKKUI MOGI, 1977 (CULICIDAE): SUBGENUS AND SPECIES OF BLOOD-SUCKING MOSQUITOES NEW TO USSR

Leningrad PARAZITOLOGIYA in Russian Vol 17, No 4, Jul-Aug 83 pp 299-304

SAZONOVA, O. N., Moscow Oblast Pedagogical Institute imeni N. K. Krupskaya

[Abstract] In 1981 in the Khasan and Lazovskiy rayons of the Maritime Provinces 69 female mosquitoes were identified as *Aedes* (*Edwardsaedes*) *bekkui* Mogi, 1977, a subgenus and species new to the USSR. Previously, they had been mistakenly identified as *Ae. vexans*. Graphical description of the specimens is provided, with pertinent characteristics summarized in tabular form. It remains to be seen whether these specimens are identical with the *Ae. pingpaensis* described in China in 1965. These specimens were very aggressive and attacked man during daytime and at night. Figure 1; references 9: 2 Russian, 7 Western.
[429-12172]

UDC 616.98:579.852.1]-091

COMPARATIVE CLINICO-MORPHOLOGIC CHARACTERIZATION OF PEACETIME ANAEROBIC INFECTIONS

Moscow ARHIV PATOLOGII in Russian No 1, Vol 46, Jan 84
(manuscript received 13 Sep 83) pp 57-63

AGEYEV, A. K., Balyabin, A. A., VYAZEMSKIY, L. A. KLISHHEVICH, B. A., MATSKO, D. Ye., and SIDORIN, Chair of Pathologic Anatomy, Military Medical Academy imeni S. M. Kirov; Pathoanatomic Department, Hospital for the Invalids of the Great Patriotic War

[Abstract] An analysis was made of 26 autopsy cases in which death was due to anaerobic infections, in order to evaluate the peacetime characteristics of such infections. In general, most infections occur as a result of surgery or wound infection, and primarily involve patients with gastrointestinal disorders and muscle ischemia in patients with secondary immunodeficiencies. In more than half of the cases nonclostridial pathogens (*Peptostreptococcus*, *Peptococcus*, *Bacteroides*) were involved, frequently in combination with pyogenic microorganisms. Depending on localization, typical cases involved myositis, cellulitis and/or fasciitis. Unlike the turbulent course of clostridial infections with gas gangrene, the nonclostridial infections were characterized as seropurulent phlegmonas. Death in all cases resulted from septic shock. In most cases antibiotics were not administered postoperatively, or inappropriate antibiotics were administered without regard to the etiologic agent. Figures 3; references 21: 14 Russian, 7 Western.
[389-12172]

PREDICTION OF POPULATION DENSITY OF GERBIL RHOMBOMYS OPIMUS (RODENTIA, CRICETIDAE) IN EASTERN ARAL KARAKUMS

Moscow ZOOLOGICHESKIY ZHURNAL in Russian Vol 63, No 1, Jan 84
(manuscript received 3 Aug 82) pp 115-119

MILIN, V. M., Sea of Aral Anti-plague Station, Dzhusaly,
Kzylordinskaya Oblast

[Abstract] Special tables were constructed to assist in the prediction of the population density of the gerbil *Rhombomys opimus* in the eastern part of the Aral Karakums, an endemic plague region. The purpose was to predict the population densities for spring-summer and autumn seasons based on past population records in conjunction with data on seasonal precipitation, seasonal temperatures, temperature/precipitation ratios for different months and population density ratio for the different seasons. The system was successfully used for the prediction of plague bacillus isolation in 1980 after a 5-year plague-free period on the basis of population density prognosis. It is expected that further improvements in the method of prediction can be made by incorporating more predictive abiotic and biotic factors. References 6 (Russian).

[364-12172]

UDC 616.935-036.2-085.33(047)

SIGNIFICANCE OF SHIGELLAR ANTIBIOTIC RESISTANCE IN EPIDEMIOLOGY OF DYSENTERY: LITERATURE REVIEW

Kiev VRACHEBNOYE DELO in Russian No 8, Aug 83
(manuscript received 30 Dec 82) pp 111-115

POPOVICH, G. G. and BONDARENKO, V. I., Laboratory of Ecology of Enteroviruses and Their Associations, Kiev Scientific Research Institute of Epidemiology and Infectious Diseases imeni L. V. Gromashevskiy

[Abstract] A literature review is presented of the current thinking on the importance of shigellar antibiotic resistance in the epidemiology of dysentery and in the severity of the pathologic process itself. By and large, most resistance is predicated on the presence of R factors since chromosomal mutations leading to resistance occur with an extremely low frequency. The present spread of R⁺ strains stems from the development of antibiotics and their extensive use in clinical medicine presents a real public health threat, and should be the object of special epidemiologic investigations to determine the circulation of the R⁺ strains in nature and clinical settings. References 26: 15 Russian, 11 Western.

[351-12172]

METHODOLOGY FOR CALCULATING REGIONAL INDICES OF MORBIDITY

Moscow SOVETSKOYE ZDRAVOOKHRANENIYE in Russian No 12, Dec 83
(manuscript received 24 May 83) pp 22-27

BOROKHOV, D. A., PETROV, Yu. P., CHUPRYNA, A. N. and SKIBIN, S. I.,
Chimkent, Oblast Division of Public Health (Director A. Zh. Zhaksybayev),
Chimkent, Oblast Council of Occupational Union (Chairman V. F. Troyan)

[Abstract] According to literature data, morbidity accompanied by temporary loss of work force amounts to 70-80% of total morbidity. It peaks in cases of pregnancy, delivery, genitourinary problems, respiratory disorders and in infectious and parasitic disorders. One can assume that indices of morbidity with temporary loss of work represent reasonably well the morbidity of the labor force. In general, calculation of morbidity with temporary loss of work based on formula No 16 is based on sampling data. When the reporting of data does not observe the strict criteria or proportionality, it is impossible to use simple arithmetic addition of initial data to reach overall governing conclusions. A formula is suggested for leveling the negative impact of the lack of sampling proportionality:

$$P_i = \sum_{j=1}^n P_{ij} \cdot g_j$$

where P_i - index of temporary work loss calculated per 100 work force,
 P_{ij} - indices of temporary work loss due to the disease studied calculated per 100 workers, and g_j - fraction of the workers of specific branches of national economy in respect to total number of workers.
References 8 (Russian).
[335-7813]

UDC 616.98:579.834.115]-091.5

CLINICAL AND MORPHOLOGIC FEATURES OF LEPTOSPIROSIS

Moscow ARKHIV PATOLOGII in Russian Vol 45, No 5, May 83
(manuscript received 2 Aug 82) pp 48-54

POLOTSKIY, Yu. Ye., SEMENOVICH, V. N., KOMAROVA, D. V., STOYANOVA, N. A.
and UDALOV, G. V., Scientific Research Institute of Epidemiology and
Microbiology imeni Pasteur; Infectious Hospital No 30 imeni S. P Botkin,
Leningrad

[Abstract] Autopsy findings are presented on 5 lethal cases of leptospirosis in Leningrad that occurred between January 1977 and February 1981.

The total number of cases recorded was 72. The patients succumbed within 6 to 30 days of infection with *Leptospira hebdomadis*, all presenting with frank jaundice due to pronounced centrilobular hepatic edematous changes, cholestasis, and cloudy swelling of the liver cells. Albuminuria, oliguria and uremia were attributed to acute tubular and interstitial nephritis, while altered capillary permeability led to multiple cutaneous and serous petechiae. Other changes included focal necrosis of skeletal muscles, myocardiodystrophy, focal myocarditis, and serous leptomeningitis. Silver impregnation techniques and immunofluorescent antibody studies revealed few leptospira in the extracellular spaces. Generally, leptospira were observed in the liver in deaths occurring before the 6th day and before an antibody response, whereas after antibody appearance the leptospira were generally limited to the kidneys. It appears that cytotoxic bacterial products may play a role in the pathogenesis of leptospirosis. Figures 2; references 19: 8 Russian, 11 Western.
[391-12172]

UDC 616.24+616.25]-02:579.842]-7

PULMONARY AND PLEURITIC CHANGES IN *SERRATIA MARCESCENS* INFECTIONS

Moscow ARKHIV PATOLOGII in Russian Vol 45, No 5, May 83
(manuscript received 24 May 82) pp 64-66

ANDREYEVA, T. V., Laboratory of Normal and Pathologic Morphology, Laboratory of Bacteriology and Virology, Institute of Obstetrics and Gynecology, USSR Academy of Medical Sciences, Leningrad

[Abstract] Three autopsy reports are presented on newborn infants that succumbed within 5 to 6 days and a fetus that survived for 11 days with pneumonia and generalized infections due to *Serratia marcescens* in conjunction with other gram-negative bacteria. Typical pulmonary changes included blood-filled alveoli, and infiltration with plasma cells and macrophages. Similar infiltrations were noted in the pleura from which *serratia* was isolated and identified by light microscopy. It appears that hemorrhagic diathesis, particularly in the lungs, constitutes an early sign of *serratia* infections in infants. Figures 1; references 5: 1 Rumanian, 4 Western.
[391-12172]

FOOD TECHNOLOGY

BRIEFS

SHIPS SERVICING MARINE PLANTATIONS--Vladivostok--21 Jan--An unusual two-part ship arrived at the plantation of sea cabbage--Laminaria--that extends over Kit (whale) Bay near the village of Glazkovka. It was specially built by ship-builders of Nakhodka for workers involved in this mariculture. Such a catamaran-combine is convenient for performing technical operations to install the underwater mariculture units. That is where the diving service is. When necessary, the boat can serve for transportation purposes and harvesting. This is but the first "swallow," as they say, in the area of developing a new specialized fleet in the Far East. It is intended for mechanization of cultivation of algae, invertebrate marine organisms and fish. At the present time, other catamarans of the diver type are being constructed at the berths in Nakhodka following the blueprints of the Vladivostok Department of Giprorybflot [State Planning Institute for the Fishing Fleet]. In addition to them, marine agronomers will receive plastic glass boats, self-propelled platforms for servicing scallop farms, motor boats and small seiners. [Text] [By N. Bratchikov] [Moscow PRAVDA in Russian 22 Jan 84 p 2] 10,657

CSO: 1840/288

FOOD VALUE OF HORSE MEAT

Krasnodar PISHCHEVAYA TEKHNOLOGIYA in Russian No 5, Sep-Oct 83
(manuscript received 18 Mar 82) pp 121-122

RSKELDIYEV, B. A. UL'YANOV, S. D., MOMYSHEV, A. A. and ZHOLAMANOV, A. Ye.,
Chair of Biochemistry and Microbiology, Semipalatinsk Technologic Institute of Meat and Dairy Industry; Dzhambul Meat-Packing Plant; Ural Meat Canning Plant

[Abstract] A chemical analysis was carried out on different grades of tenderized horse meat suitable for sausage production. In terms of fat, protein, ash and moisture content, as well as the presence of essential amino acids, considerable economies would be realized if grades 1 and 2 were combined into a single grade of meat. Such a combination is recommended as a basis for a more rational utilization of this protein resource.

[1005-12172]

OPTIMUM DIET FOR POPULATION

Moscow TEORIYA I PRAKTIKA FIZICHESKOY KUL'TURY
in Russian No 1, Jan 84 pp 43-44

YEL'NIKOV, V. G. and SYTINSKIY, I. A., doctor of biological sciences,
State Orders of Lenin and Labor's Red Banner Institute for Physical Culture imeni P. F. Lesgaft

[Abstract] Dietary and public health studies to develop dietary principles for various ages and occupations form an important part of the USSR Food Program. Goals are to determine current diets, establish energy needs as an important parameter for food quantities, and analyze needs in specific nutrition categories including protein, carbohydrates, fats, vitamins and minerals. The present article reports on computer algorithms and programs for making such analyses and establishing a model diet for a period of 1-3 weeks on the basis of chemical composition, costs, calory content and weight. In addition to caloric and nutritional values, the study also took notice of meal variety and the number of dishes in a particular meal. Different eating habits and customs in various regions of the USSR were also included in the computer data, along with work and relaxation standards. Special attention was directed at nutritional and psychological parameters for preschool children. References 11 (Russian).

[356-12131]

GENETICS

UDC 575.113:576.8

GENETICS OF BACILLUS THURINGIENSIS ENTOMOPATHOGENIC BACTERIUM

Yerevan BIOLOGICHESKIY ZHURNAL ARMENII in Russian Vol 36, No 5, May 83
(manuscript received 10 Jan 83) pp 363-374

AZIZBEKYAN, R. R., All-Union Scientific Research Institute of Genetics,
Moscow

[Abstract] Genetic studies were conducted on the entomopathogenic bacterium *Bacillus thuringiensis* to better delineate the genetic basis of toxin production and, in general, to evaluate the genetic potential of this valuable bacterium for genetic manipulation. *Bacillus thuringiensis* has been found capable of exchanging genetic information via general transduction, plasmid-mediated transformation of protoplasts, and protoplasmic fusion. More recent studies have yielded tentatively-positive results on the feasibility of cloning the gene responsible for toxin production in other bacteria. It remains to be determined with certainty whether the toxin gene(s) are chromosomal or plasmid in nature. References 29: 11 Russian, 18 Western.
[381-12172]

UDC 576.85148:575.24/116:577.16.164.1

MAPPING OF GTP CYCLOHYDROLASE II AND RIBOFLAVIN SYNTHASE GENES ON *ESCHERICHIA COLI* K-12 CHROMOSOME

Kiev TSITOLOGIYA I GENETIKA in Russian Vol 17, No 5, Sep-Oct 83
(manuscript received 24 Mar 83) pp 54-56

TESLYAR, G. Ye. and SHAVLOVSKIY, G. M., Lvov Branch, Institute of Biochemistry, Ukrainian SSR Academy of Sciences

[Abstract] Description is provided of conjugation studies conducted with riboflavin-dependent *E. coli* K-12 using a variety of F'-factors to determine the map location of GTP cyclohydrolase II and riboflavin synthase genes. The results demonstrated the transfer of the first two

genes in the time periods of 27 to 30 min and from 56 to 59 min, respectively. Transfer of the gene with a mutation leading to accumulation of 2,6-dioxy-5-amino-4-ribitylamino-pyrimidine occurred in the 61 to 65 min time frame of conjugation. It is evident, therefore, that genes leading to the synthesis of riboflavin are not linked. References 7: 2 Russian, 5 Western.
[428-12172]

LASER EFFECTS

LASER CURES ULCERS

Moscow TASS in English 29 Feb 84

[Text] An alliance between physicians and physicists has led to a new method of treatment for ulcers by means of a copper vapor laser, says Anatoly Loginov, chief of the Central Research Institute of Gastroenterology, according to "MN Information." The laser is no novelty in medicine. However, so far it has not been used in gastroenterology. We are using it to stop hemorrhaging, to remove polyps from the stomach and to treat ulcers. First results show that it considerably speeds up the cure of ulcers. A two-month period, for example, is reduced to two weeks.

CSO: 1852/07

NEW SOVIET LASERS

Leningrad TASS in English 20 Jan 84

[Text] Biochemists liken to a scalpel in the hands of a surgeon the possibilities of the miniature laser installation "Kvant" created in the USSR. Provided with an electron microscope, it makes it possible to perform unique "operations" on molecules of ribonucleic acid which participate in the synthesis of proteins. The new optical edge operates in the ultraviolet band of the spectrum and does not get "stuck" in a macromolecule, with exquisite accuracy it divides it into pre-set chains. Such an instrument, the authors maintain, opens up unique possibilities for getting to know the subtlest processes in the living organisms on the molecular level.

A report to this effect was made at a conference of Soviet scientists, engineers and technologists in the field of laser optics. The conference came to a close here today [20 Jan]. One of the organizers of the conference, Yuri Denisyuk, professor at the State Optics Institute in Leningrad, the founder of laser holography in the USSR, has said that, due to new materials and principles of construction of Soviet quantum generators, their efficiency has grown several-fold and has reached an order of fifty percent [sic]. Such an energy potential has opened up new spheres of application for these installations in science and technology. Experts regard as quite promising the use of laser emission for a directed catalysis of chemical reactions. New technological processes to obtain superpure materials with an array of pre-set properties are being worked out on this basis.

By focusing a powerful impulse on a small area--the scientist explained further--it is possible to create great concentrations of energy which can destroy and evaporate the strongest materials, including diamond and corundum. Installations of this type are already included in technological lines for the treatment of particularly elaborate components at the firms "Leningrad Metalworks" and "Elektrosila."

CSO: 1852/08

LASER SURGERY OF CUTANEOUS LEISHMANIASIS

Ashkhabad ZDRAVOOKHRANENIYE TURKMENISTANA in Russian No 7, Jul 83
pp 18-20

BABAYEV, O. G. and BABAYEVA, O. B., No 3 Chair of Surgical Diseases,
Turkmen Order of Peoples Friendship State Medical Institute

[Abstract] Therapeutic trials were conducted on 44 patients with cutaneous leishmaniasis to test the effectiveness of CO₂ laser (Skal'pel'-1; 25 W output, 106 nm wavelength focused to 1 mm² diameter) in the management of this disorder. Pain disappeared completely in 26 of the patients within a day of treatment, and was insignificant in 5 of the 44 patients on the 5th day. Healing and scar formation were evident in some 74% of the patients within two weeks of treatment. Leishmania disappeared completely from 37 patients, and recurrences were noted in only 3 cases of the 23 followed for 2-6 months. These clinical observations suggest that laser surgery is an effective modality in the management of cutaneous leishmaniasis and, furthermore, does not lead to keloid complications. References 6 (Russian).
[386-12172]

UDC 617-001.4-085.849.19-036.8:616-003.93-091

EFFECT OF LASER IRRADIATION ON WOUND REVASCULARIZATION

Moscow ARKHIV PATOLOGII in Russian Vol 45, No 8, Aug 83
(manuscript received 10 Dec 82) pp 72-76

BARKOVSKIY, V. S., Central Scientific Research Institute of Stomatology,
USSR Ministry of Health, Moscow

[Abstract] Morphometric studies and microscopic observations were conducted to evaluate the effect of laser irradiation on the rate of wound revascularization, using a rabbit ear model with an implanted window chamber. The results demonstrated that irradiation of the wound with a 5 mW helium-neon laser defocused to cover a 10 mm diameter (i.e., the size of the wound) accelerated capillary penetration into the wound. Complete revascularization was seen within 20-22 days in the laser-treated animals, but required 25-27 days in the untreated control animals. Evidently, at least certain kinds of lasers may have clinical utility in enhancing wound revascularization and promotion of healing. Figures 3; references 17: 8 Russian, 9 Western.
[390-12172]

EFFECTS OF LASER IRRADIATION ON X-RAY-INDUCED HEPATIC DYSTROPHY

Moscow MEDITSINSKAYA RADIOLOGIYA in Russian No 9, Sep 83

(manuscript received 3 Apr 83) pp 59-61

POLONSKIY, A. K., KHARLAMPOVICH, S. I., MASHCHANOVA, D. D. and
POTAPOVA, V. B., Moscow Medical Stomatological Institute named
N. A. Semashko, USSR Ministry of Health

[Abstract] Outbred rats were employed in a study to determine the effects of laser irradiation on dystrophic changes in the liver induced by x-irradiation in a single 650R dose. Histologic, ultramicroscopic, cytochemical and morphometric studies pointed to extensive structural and metabolic derangement in the liver, which persisted for at least a 20-day period of observation. However, irradiation of the shaved abdominal area with a helium-neon laser (632 nm wavelength from a 25 mW source with a power flux density of 7.96 mW/cm^2 , defocused to give a 2 cm diameter spot) showed marked improvement in hepatic function and structure even after only three 5-min exposures. Virtually complete recovery was seen after the full course of 20 laser treatments. These observations are of interest in that they illustrate the therapeutic potential of low-intensity helium-neon laser. Figures 2; references 6: 5 Russian, 1 Western.

[361-12172]

EARLY EMBRYOGENESIS OF PERIPHERAL SEGMENT OF HEARING APPARATUS IN
STENELLA ATTENUATA

Moscow ONTOGENEZ in Russian Vol 14, No 3, May-Jun 83
(manuscript received 25 May 82) pp 312-318

SOLNTSEVA, G. N., Institute for Developmental Biology imeni N. K. Kol'tsov,
USSR Academy of Sciences, Moscow

[Abstract] While all mammals have basically the same hearing systems, the actual form varies in each. The author traces the embryonic development and gradual emergence of hearing apparatus suitable for the aquatic life of *S. attenuata*, whose hearing system became extremely acute, despite the minimal orifice, and could perceive a wide range of frequencies. Comparison is made to land mammals, and observations given of external and inner ear, hammer and anvil and inner ear canals at embryo lengths of 30, 42, 62, 90 and 99 mm. Adaptive processes that reach completion at an early developmental stage are emphasized. Figures 4; references 7: 5 Russian, 2 Western.
[378-12131]

MEDICINE

MEDIFOR LANGUAGE IN COMPUTER DIAGNOSIS

Moscow MOSCOW NEWS in English No 8 (3100) 4-11 Mar 84, p 10

CHIRKOV, Yuri

[Text] A professionally adequate dialogue with a computer will be possible for a physician who has learned the MEDIFOR language developed at the Institute of Automation and Control Processes, which is attached to the Far East Scientific Center of the USSR Academy of Sciences.

The aim, pursued by researchers led by Alexander Kleshchev, candidate of physics and of mathematical sciences and head of the laboratory for artificial intelligence programming systems, and Mary Chernyakhovskaya, candidate of medical sciences, consists in turning the computer from an encyclopedic "know-everything" and a semiconductor reference book into a "creature" endowed with the ability to analyze data and make a diagnosis....The computer era has come and there is an illusion that the electronic brain can solve virtually any intellectual task, provided the right algorithm (a set of instructions for a computer as to what to do and in what order) has been found. Alas, time has shown that not all problems can be expressed in algorithms, the so-called "recognition problems" being the most difficult, such as speech recognition, analysis of the environment and many other things. Medical diagnosis is found to be among the "tough ones." But just the same, they go on trying to build a computer physician. The machine that swallows a host of medical facts should in the final account be taught not simply to extract from the memory the information needed by the physician, but also to analyze it immediately. One can hardly overestimate this faculty since, in medicine, it is sometimes seconds that count, with human life being the price.

There has been some partial success. The computer sometimes makes the correct diagnosis even in very complex cases. But it may fail in a trivial situation. The reason is that the electronic diagnostician cannot understand the situation, let alone explain it to itself and to the physician, unlike humans who take account of numerous nuances. Particularly, if the physician and the computer speak different languages.

For is it not perfectly clear that, making use of the computer in a difficult situation, the physician expects answers to his "whys" and "hows" in a language which would be clear to him, from a machine which has been through a medical institute course and trained to analyze and to diagnose?

"MEDIFOR is precisely this kind of language," says Alexander Kleshchev. "This is a way of describing the medical knowledge, which is compact and equally understandable for the physician and for the computer. It was not an easy job building it, because it is based on a fine synthesis of the graphs theory, formal logic, semantics and many other no less involved sciences."

Try and imagine for a minute the amount of knowledge which is required by the physician who specializes, say, in "internal" medicine. It has been calculated as containing about 200,000 facts. Now add hundreds of thousands of data, which are not included in academic and reference books, but which are used by practicing physicians to take account of the life conditions, seasons, time of the day, and a lot of other factors. The figures go into millions. It is not easy to keep all this in one's head, no matter how enlightened it is. It is even more difficult to remember this large amount of information, the things that are needed in a certain particular case, to analyze them and to take the one and only correct decision. This is why even the most experienced physician may not be able to explain how he has made a particular diagnosis. Was it intuition or experience? But is it not too risky? Just like any other human being, the physician is not immune to mistakes: fatigue, personal problems.... the reasons are numerous.

The electronic consultant now being designed by Far Eastern researchers will have no such problems, because the MEDIFOR is not only a language but also a program.

CSO: 1852/05

ALCOHOLIC CARDIOMYOPATHY: RISK FACTOR IN SUDDEN DEATH

Moscow ARKHIV PATOLOGII in Russian No 1, Vol 46, Jan 84
(manuscript received 19 Jan 83) pp 14-22

VIKHERT, A. M. and TSYPLENKOVA, V. G., Department of Human Cardiovascular Pathology, All-Union Cardiological Science Center, USSR Academy of Medical Sciences, Moscow

[Abstract] An analysis was conducted on alcoholic cardiomyopathy (ACM) as a risk factor in sudden cardiac death (SCD) vis-a-vis coronary heart disease (CHD). Evaluation of autopsy findings indicate that only a small fraction of subjects with ACM are at risk of SCD and that predisposition presumably rests on metabolic susceptibility to damage by alcohol and its metabolites. Patients with ACM that succumb to SCD are younger than patients with CHD: 35% of the ACM subjects are less than 40 years of age, vs. 12% for CHD. Furthermore, 60% of SCD in ACM patients occurs in complete absence of blood alcohol (60% of cases) or in the presence of only moderate quantities of alcohol (1-2% of cases). At the time of SCD, in the case of the ACM patients there is no infarction, coronary thrombosis, and death is generally attributed to coronary vasospasm. Generally speaking, patients with ACM show no decrease in the myocardial capillary network, but there is thinning of the endothelium, homostasis, and capillary dilatation. Figures 3; references 31: 18 Russian, 13 Western.
[389-12172]

UDC 616-001.4-089:[615.355:577.156]

IMMOBILIZED PROTEOLYTIC ENZYMES IN WOUND TREATMENT

Leningrad VESTNIK KHIRURGII IMENI I.I. GREKOVA in Russian No 8, Aug 83
(manuscript received 25 Jan 83) pp 50-54

KOGAN, A. S., professor, SEMENOVA, L. A., doctor of medical sciences, GONCHAR, A. M., candidate of medical sciences, KULIKOV, L. K., MOROZOVA, S. A., SOKOLOV, B. N. and ZUSMAN, I. K., Chair of Surgery, Irkutsk Institute for the Advanced Training of Physicians; Institute of Cytology and Genetics, Siberian Department, USSR Academy of Sciences, Novosibirsk

[Abstract] Several therapeutic protocols were evaluated in terms of the clinical outcome in the management of refractory wounds. Analysis of several hundred cases demonstrated that standard surgical debridement in conjunction with application of Profezym (immobilized bacterial protease) resulted in clearing of purulent wounds within a time span of 2.4 to 7.2 days with concomitant granulation and healing. Standard

protocols calling for combination of surgery with application of sodium chloride-impregnated dressings, or a combination of surgical debridement and application of soluble trypsin were less effective and, depending on the nature of lesion, required 6.0 to 26.7 days for the onset of granulation and scar formation. Evaluation of the histologic and cytochemical data showed that Profezym-based treatment promoted earlier epithelialization and potentiated the metabolic processes of granulation tissues. Profezym appears to be, therefore, a valuable adjunct in the management of refractory purulent wounds that enhances tissue regeneration. Figures 4; references 10 (Russian).
[423-12172]

CYANOBACTERIAL FILTERS IN TRANSFORMATION OF GASEOUS COMPONENTS OF HYDROTHERMS OF UZON CALDERA IN KAMCHATKA

Moscow ZHURNAL OBSHCHEY BIOLOGII in Russian Vol 44, No 6, Nov-Dec 83
(manuscript received 8 Sep 82) pp 842-851

GERASIMENKO, L. M., KARPOV, G. A., ORLEANSKIY, V. K. and ZAVARZIN, G. A.,
Institute of Microbiology, USSR Academy of Sciences, Moscow; Institute of
Vulcanology, Far Eastern Scientific Center, USSR Academy of Sciences,
Petropavlovsk, Kamchatka

[Abstract] The caldera of the Uzon volcano in Kamchatka is rather unique in that two, geographically-distinct, microbiological communities function in the different gas and thermal environments. One bacterial overlay or filter, consisting of *Thiobacillus* sp., *Leptospirillum ferrooxidans*, *Sulfobacillus* sp. and *Sulfolobus* sp., predominates in the region with sulfur emission and year-round temperatures of 30-50°C. This system is responsible for sulfuric acid formation which becomes concentrated as a result of evaporation, leads to rock leaching and destabilization of the entire system. In areas without sulfur emission a cyanobacterial film utilizes the thermal energy and photosynthetic mechanisms for carbon dioxide assimilation and production of hydrogen, methane, and hydrogen sulfide, i.e., in effect, the second system constitutes a cyclic system. Figures 6; references 13: 11 Russian, 2 Western.
[370-12172

NONIONIZING ELECTROMAGNETIC RADIATION EFFECTS

UDC 613.647-07

HYGIENIC EVALUATION OF ELECTRIC FIELD CREATED BY HIGH VOLTAGE POWER LINES UNDER CONDITIONS OF POPULATED CITIES

Moscow GIGIYENA I SANITARIYA in Russian No 11, Nov 83
(manuscript received 22 Apr 83) pp 17-21

KOZYARIN, I. P. and DUMANSKIY, Yu. D., Kiev Medical Institute imeni Academician A. A. Bogomolets; Kiev Scientific Research Institute of General and Communal Hygiene imeni A. N. Marzeyev

[Abstract] Hygienic evaluation of the electric field of 50 Hz frequency and 1-15 kW/m voltage was carried out at locations of high power line (HPL) passage. On the basis of experimental results obtained, a maximum permissible dose of 12 kW/m was established for occasional, short-term exposure of up to 0.5 hr/day and 5 kW/m for daily short-term exposures. HPL systems of 500 and 750 kW should be located at least 300-500 m from inhabited areas. Human activity requiring frequent stay (farming) in these prohibited areas should not be permitted. Signs should be posted on the roads crossing the HPL advising people to keep moving. High trees should be placed on the sides of HPL's to provide screening effect. Figure 1; references: 4 (Russian).
[348-7813]

UDC 615.285.015.4:616-018.1

STUDY OF MECHANISM OF BIOLOGICAL ACTION OF CHLOROORGANIC PESTICIDES BY
ELECTRON PARAMAGNETIC RESONANCE METHOD

Moscow GIGIYENA I SANITARIYA in Russian No 11, Nov 83
(manuscript received 20 May 83) pp 14-17

GONCHARUK, Ye. I. and MELENEVSKAYA, A. V., Kiev Medical Institute imeni
Academician A. A. Bogomolets

[Abstract] The goal of the present study was to investigate the effect of chloroorganic pesticides on mitochondrial and microsomal enzyme systems, the first being responsible for bioenergetic cellular processes and the second--for detoxification of cells. Experiments were performed on randomly bred white rats exposed to heptachlor (HC) and lindane (LN) using electron paramagnetic resonance (EPR) which can be applied to intact tissue without prior isolation of enzymes. It was shown that EPR is a sensitive biophysical method capable of identifying early toxic effects of chemical substances, in particular changes in energetic and detoxifying systems. The signal intensity of EPR was diminished in all paramagnetic centers studied upon exposure to HC and LN. Thus, it was shown that exposure to HC and LN inhibits the enzymes of energy producing and detoxifying systems in hepatic cells. Figures 2; references 12: 8 Russian (1 by Western author), 4 Western.
[348-7813]

MAGNITUDE OF SYSTEMATIC ERRORS IN DETERMINING MEDIAN LETHAL DOSE OF HARMFUL SUBSTANCES

Moscow GIGIYENA I SANITARIYA in Russian No 11, Nov 83
(manuscript received 18 Jan 83) pp 63-65

KORSHUN, M. N. and BRAYCHENKO, L. M., Kiev

[Abstract] The limits of overall unavoidable systemic component of measurement error (USCME) in determinations of LD₅₀ and the contribution of each subcomponent of USCME were established. To minimize this range, the accuracy of the determination of body weight of the experimental animals had to be improved along with the accuracy of determining the volumes of liquids used in preparation of substances being evaluated and the volumes of the test solutions being injected. On the basis of this analysis it should be possible to select accurate measurement tools, to lower the most crucial components of USCME and thus to increase the accuracy of experimental data. The limits of overall USCME in determining LD₅₀ are higher for mice and for liquids than for rats and solids, respectively. Rererences 3 (Russian).
[348-7813]

UDC 615.825.7:547.241].099:616.12

CARDIOTOXIC EFFECTS OF ORGANOPHOSPHORUS PESTICIDES

Moscow GIGIYENA I SANITARIYA in Russian No 11, Nov 83
(manuscript received 28 Feb 83) pp 72-73

NADMAITENI, L. and MAROSHI, D., Szeged Medical University, Hungary

[Abstract] An experimental model based on guinea pigs was developed to study electrocardiologic changes. A number of pesticides was studied with this model which in acute intoxication showed a direct effect on cardiac musculature: prolonged duration of Q-T, depression of ST segment and inversion of T; all of these findings represented irregularities in repolarization and depolarization. Other irregularities were observed in excitability and conductivity, progressive brachycardia, atrioventricular block and asystole. These symptoms were found to be prognostic, because they invariably were followed by death. In human observations it was established that atropin was ineffective in treatment of poisoning with organophosphorus pesticides.
[348-7813]

PROBABILITY EVALUATION METHOD FOR MEDIAN LETHAL TIME IN ANIMALS EXPOSED TO LD₅₀

Moscow GIGIYENA I SANITARIYA in Russian No 11, Nov 83
(manuscript received 21 Mar 83) pp 66-68

PASTUSHENKO, T. V., PILIPENKO, Yu. A., ZHUKOV, A. A. and PEREYMA, F. A.,
Ternopol' Medical Institute

[Abstract] Median lethal time (ET₅₀) was proposed as a measure of cumulative effects observed in determination of chronic toxicity. Determination of ET₅₀ was based on classical probit analysis which had several limitations. An improved method based on graphic extrapolation was developed plotting animal deaths observed in hours or days during an acute experiment, followed by determination of median lethality for each dose administered. However, because graphic determinations are approximations at best, a method was developed for calculation of median effective time of animal death (ET₅₀₍₁₎) as a function of LD₅₀ in acute toxicity test. References 5 (Russian).
[348-7813]

HEIGHTENED TRANSFORMATIONAL ACTIVITY OF SA7 ADENOVIRUS BY METAL AEROSOLS IN SENSITIVE CELL CULTURES

Kiev VRACHEBNOYE DELO in Russian No 1, Jan 84
(manuscript received 15 Jul 83) pp 112-114

POTEBNYA, G. P., STRUK, V. I. and GORBAN', L. N., Institute of Oncological Problems imeni R. Ye. Kavetskiy, UkSSR Academy of Sciences; Scientific Research Institute for Labor Hygiene and Occupational Diseases, UkSSR Ministry of Health, Kiev

[Abstract] Metal vapors resulting from welding, including aerosols of chromium, nickel, molybdenum and vanadium, add to previous dangers of metal poisoning, but insufficient study has been made of such airborne poisons. The present article reports on culture growth with 3 separate metal aerosols; No 1 contained 30% Mn, 3.0% Ni, 20.0% Fe, 5.5% Cr³⁺ and 0.03% Cr⁶⁺; No 2 contained 36% Ni, 30% Fe, 2.7% Cu, 5% Mn and 0.7% Cr⁶⁺; and No 3, 4.4% Mn, 1.25% Ni, 7.5% Cr³⁺, 21.75% Cr₂O₃, 11.5% CrO₃, 3.6% Fe and 11% Fe solubles. The transforming agent used was monkey adenovirus SA7. The welding aerosols were introduced at varying mcg/ml concentrations. The tested aerosols had no cytotoxic effect on hamster embryo or rat kidney cells. At concentrations of 32 mcg/ml, the welding vapors

showed toxicity ascending from 1 to 3, damaging cell DNA mechanically and chemically. The damage was irreversible. The vapors had cocarcinogenic properties at concentrations of 4 mcg/ml. The focuses of transformation in cultures subjected to both adenovirus and metal welding vapors were larger than those where only the virus was introduced. As a result of this study, a screening system for such welding vapors has been developed.
[1008-12131]

UDC 616-001.36-08:615.21]:615.017

COMPARATIVE EVALUATION OF TRAUMATIC SHOCK THERAPY WITH SEVERAL SOVIET PHARMACEUTICALS

Leningrad VESTNIK KHIRURGII IMENI I. I. GREKOVA in Russian No 6, Jun 83
(manuscript received 29 Dec 82) pp 73-77

BAZAREVICH, G. Ya., KATKOVSKIY, G. B., ZIMAKOVA, I. Ye., LAZAREVA, L. V., KAMBURG, R. A., ABUZYAROV, I. G., GRIGORENKO, S. G., AYDAROV, M. A., MARGOLIN, Ye. S., NIZAMUTDINOV, Ye. Z. and REPEYEV, V. M., Laboratory of Pathologic Physiology, Kazan Scientific Research Institute of Traumatology and Orthopedics

[Abstract] Several therapeutic protocols were formulated to assess the efficacy of different drugs alone or in combination in traumatic shock management, employing an experimental model of outbred rats with soft tissue trauma and the results obtained in clinical trials. The comparative evaluation involved studies with neurotropic agents (mekibar and promedol), an antihistaminic (dimedrol), and a nonnarcotic analgesic (anal'gin), as well as anal'gin + dimedrol and mekibar + promedol combinations. Both series of studies pointed to the effectiveness of mekibar as the drug of choice in such cases and its great potential in the management of physiological stress. In certain respects, the mekibar + promedol combination offered definite advantages in improving survival figures and in the extension of life. Figures 1; references 9: 8 Russian, 1 Western.
[421-12172]

PHYSIOLOGY

GENE ENGINEERING FOR INTERFERON DISCUSSED

Moscow IZVESTIYA in Russian 2 Feb 84 p 3

[Interview by Ye. Manucharova and M. Khromchenko, special correspondents of IZVESTIYA, with Academician Yuriy Anatol'yevich Ovchinnikov, vice-president of the USSR Academy of Sciences, recipient of Lenin Prize, director of the Institute of Bioorganic Chemistry, USSR Academy of Sciences: "Symphony of Knowledge"]

[Excerpt] [Question] You are devoting much attention to the Rhodopsin program. Is this a contribution to solution of energy problems?

[Answer] Both energy problems and those related to physiology of vision. Rhodopsin is the light-sensitive element of the retina. Thanks to it, the beams of light are transformed into impulses of visual information. But at our institute, the strongest team is studying not so much rhodopsin proper, as the entire chain of enzymes, by means of which visual signals are amplified and transmitted to the brain. This means that, in this instance, we are already working for neuro-physiology.

And this is where new problems arise. Physiology has changed markedly in our times. It is also becoming a molecular, as well as a cellular and physicochemical discipline.

Thinking about the future of this extremely important science, the presidium has adopted a decision to establish a new physiological institute. The Academy's Institute of Higher Nervous Activity and Neurophysiology is also reorganizing its work. Finally, an All-Union program of ecological research is being prepared. And this, as you can realize, is already broader than the study of an individual organism, it is the population level.

[Question] Readers were interested in the January item in our paper about the possibility of recovering interferon through gene engineering. However, this prompted a rather unexpected reaction in some physicians: do we really need it? Meaning that, even when the human body encounters a virus, it does not produce this compound in amounts that are suggested to control viruses. The possibility cannot be ruled out that, from the same point of view, you will come upon, let us say, insulin, in proposing other agents produced through gene engineering.

[Answer] There are tens of millions of people on earth suffering from diabetes mellitus, and they take insulin in quantities that their pancreas never produced.... And the Academy is rushing industry, striving to obtain gene-engineering insulin as fast as possible, as well as other drugs in the amounts needed by clinicians.

I have no doubt that the body of a sick individual requires active compounds, and we must provide them. Even the healthy body has some weak "areas" that are incapable of withstanding many of the current burdens. They are related, in particular, to environmental pollution. Modern science must help fortify the body in advance, let alone during a dangerous period. Interferon is the only nonspecific agent that has an effective influence on any viruses. In case of unforeseen circumstances, expressly this agent will be found to provide reliable protection, which we will be able to use right away, even before we learn the nature of the new enemy.

Of course, physicians will be the ones to settle questions such as dosage, which diseases and at what times prior to being stricken by a virus the agent is to be used, and they have the right to the deciding vote. Incidentally, it would be desirable for these problems to be solved considerably faster. But for them to be solved at all, the agent itself is necessary. Moreover, it is not needed only in medicine. It is also absolutely mandatory to bar the road of viral diseases to farm animals. For this reason, for me as vice-president of the Academy the important thing in this matter is that we know how to solve gene engineering problems at the present time.

By the way, there are 40 major companies in the West, including transnational ones, working with interferon. And when President Reagan of the United States maintained that we shall not reach the western level of science, presumably because we are not strong enough, he was also referring to gene-engineered interferon. Yet we have even overtaken our western colleagues in some aspects of this work. We have so-called mutant interferons that no one else in the world has.

Taking advantage of crises in political situations, the American administration would very like to slow down development of Soviet science, including physicochemical biology. But it is too late! In the last 15 years, much has been done in our country to strengthen our own scientific and technological potential. And, although we still need contacts with the West to solve some problems, it already needs us more in many respects.

Ultimately, natural scientists of the whole world must become a single family. We all have an equal need for regular exchange of research results, joint analysis of achievements and failures and frank discussions for the sake of advancing to new heights. Otherwise, one would cook in his own

juice. All people on our planet are interested in our science and its achievements. And there are so many remarkable scientific discoveries, so many opportunities for joint work and for multiplying the potential of mankind....

I can state with full responsibility that, for our part, we are doing and will do everything that depends on us to unite the family of the whole world's scientists.

10,657

CSO: 1840/398

UTILIZATION OF BAROREFLECTIVE AND CHEMOREFLECTIVE EFFECTS IN STUDYING
ADAPTATION MECHANISMS OF HUMANS AND ANIMALS TO HIGH ALTITUDES

Frunze ZDRAVOOKHRANENIYE KIRGIZII in Russian No 6, Nov-Dec 83 pp 16-20

ANIYAROV, S. B., BEBINOV, Ye. M., LANSKITY, Uu. M. and NIYAZBEKOVA, I. K.,
Kirgiz State Medical Institute

[Abstract] In spite of the fact that many studies have been devoted to hemodynamics regulation at high altitudes, the methodology of carotid baroreception left some authors questioning its application under conditions of high altitudes. A modified method for evoking baroreflex was used in this study, in which the neck area was effectively blocked from the surrounding atmosphere, because the pressure changes in external atmosphere could be transmitted through the soft tissue to the walls of the carotid artery. The second informative method used in studying vegetoreflexes in mountainous regions is the observation of the activity of chemoreceptor arterial link, which relates to the performance of the oxygen test. Special spirographs were constructed adaptable to human and animal use, which minimized the resistance to breathing. Using these newly developed tools, it was possible to obtain objective information on some adaptive mechanisms. Figures 3. (Citations within text)

[374-7813]

COMPARATIVE EVALUATION OF BODILY REACTIONS DURING POST-STRESS PERIOD AND
DURING SEQUELAE OF HIGH ALTITUDE HYPOXIA

Frunze ZDRAVOOKHRANENIYE KIRGIZII in Russian No 6, Nov-Dec 83 pp 20-24

TILIS, A. Yu., KADYRALIYEV, A. K. and KAZIYEV, A. K., Chair of Pathological Physiology at Kirgiz State Medical Institute

[Abstract] Experiments were performed on dogs exposed to burn trauma followed by transfusion with human blood, to study heterotransfusion shock. It was shown that under conditions of high altitudes, the animals exposed to burn trauma exhibited increased sensitivity towards heterotransfusion. The animals were most susceptible to this effect several days after burn trauma when the hypophysis-adrenocortical system appeared to become exhausted. Under readaptation conditions, transfer to lower altitudes led to rearrangement of many functional systems directed at the "reorientation" of the organism. As a result, the adaptive mechanisms broke down. On this background, the stress factor (heterotransfusion) attacks the organism whose defense mechanism was weakened. (Citations within text)

[374-7813]

CIRCULATION IN HEALTHY INDIVIDUALS IN ARID ZONE OF TURKMENIA. PART I.
STUDIES IN HORIZONTAL AND ORTHOSTATIC POSITIONS

Moscow KARDIOLOGIYA in Russian Vol 23, No 11, Nov 83
(manuscript received 3 Nov 82) pp 76-82

BABAYEV, A. B., CHARYYEV, M. Ch. and GLEZER, G. A., Chair of Propedeutics of Internal Disease, Turkmen Medical Institute, Ashkhabad; Laboratory of Pharmacologic Nephrology, Scientific Research Institute for Biological Testing of Chemical Compounds, Moscow

[Abstract] Orthostatic tests and horizontal studies were conducted on 164 healthy males during the cool season, 143 subjects in the summer season and 66 males in the transitional season covering the first few hot summer days in Ashkhabad to determine the effects of the arid conditions on cardiac factors. The age range covered subjects less than 35 years of age to more than 50 years of age. During the cool season, orthostatic changes in circulation were similar to those recorded in regions with moderate climates. However, in the summer the orthostatic drop in blood pressure and the decrease in the cardiac index and circulating blood volume were more pronounced than in the cool season. However, the increase in the heart rate and the diastolic pressure were less pronounced. Furthermore, orthostatic changes in the cardiovascular status were most markedly affected in the transitional period when the systolic pressure, stroke volume and the cardiac index show a considerable decrease, while the diastolic pressure and peripheral vascular resistance remain either unaltered or show a slight increase, and the heart rate shows a marked increase. Figures 3; references 29: 19 Russian, 10 Western.
[360-12172]

UDC 612.57+612.225

COUPLING OF PULMONARY VENTILATION AND BLOOD FLOW IN CATS EXPOSED TO
ELEVATED AMBIENT TEMPERATURE

Leningrad FIZIOLOGICHESKIY ZHURNAL SSSR IMENI I. M. SECHENOVA in Russian Vol 70, No 1, Jan 84 (manuscript received 14 Mar 83) pp 42-47

DVORETSKIY, D. P. and TASHLIYEV, V. A., Department of Physiology of Visceral Systems imeni K. M. Bykov, Institute of Experimental Medicine, USSR Academy of Medical Sciences, Leningrad

[Abstract] Anesthetized cats were employed in studies on dynamic changes in respiration, hemodynamics, and blood gases in response to exposure to air at 50°C for 1.5 h in order to evaluate the efficiency of pulmonary

gas exchange in experimental hyperthermia. With the onset of hyperthermia the respiratory rate, ventilation, the respiratory dead space and water loss from the upper respiratory tract increased. An increase in the body temperature to 39.4°C did not have an adverse effect on pulmonary gas exchange due to a balanced increase in the ventilation and pulmonary blood flow, i.e. \dot{V}/\dot{Q} and acid-base imbalance (respiratory alkalosis and metabolic acidosis). The latter phenomena are representative of a lack in coordination between the cardiovascular and pulmonary systems. Figures 5; references 19: 4 Russian, 15 Western.
[363-12172]

UDC 612.53

THERMOREGULATORY ACTIVITY OF MOTONEURON POOL IN RATS ADAPTED TO COLD AND HYPOXIA

Leningrad FIZIOLOGICHESKIY ZHURNAL SSSR IMENI I. M. SECHENOVA in Russian Vol 70, No 1, Jan 84 (manuscript received 8 Jul 83) pp 75-80

SOROKINA, L. V., LUPANDIN, Yu. V. and VLASOVA, L. P., Chair of Human and Animal Physiology, State University imeni O. V. Kuusinen, Petrozavodsk

[Abstract] Studies were conducted on the efficiency of shivering thermogenesis in outbred rats adapted either to cold (4-5 weeks at -1 to -15°C) or hypoxia (7000 m in pressure chamber for 3 h, 6 times per week for 35 days), by evaluating the discharge rates of various motoneuron pools and individual motor units. Adaptation to cold was found to diminish the rate of discharge, while adaptation to hypoxia enhanced the rate of discharge during shivering thermogenesis. Cold adaptation, therefore, was found to increase the efficiency of shivering thermogenesis, while adaptation to hypoxia diminished the efficiency of this mechanism as a result of the changes in the utilization of ATP for muscular contraction. Figures 5; references 19: 15 Russian, 4 Western.
[363-12172]

DYNAMIC CHARACTERISTICS OF BIRTH RATE DURING PAST FEW YEARS

Moscow ZDRAVOOKHRANENIYE ROSSIYSKOY FEDERATSII in Russian No 11, Nov 83 (manuscript received 27 May 83) pp 11-17

[Article by Professor M. S. Bednyy, Republic Scientific Research Laboratory of Medical Demography, RSFSR Ministry of Health, Moscow]

[Text] The problem of numerical and qualitative renewal of new generations has always been the object of close attention of the Communist Party and the Soviet Government and of the entire Soviet health system.

The birth rate occupies the leading position among the demographic factors that affect the dynamics and structure of the population.

The birth rate in the USSR during the past two decades had complex dynamics. A compensatory growth of the birth rate was observed during the decade after World War II (approximately from the end of the 1940s to the end of the 1950s) due to the marriages postponed during the war and generally the increased marriage rate typical for the postwar period. The average annual absolute number of newborns in the country comprised on the order of five million persons during the decade (1950-1959), while the birth rate index during this period was at the level of 25 per 1,000 population. There was a decrease of both the absolute number of newborns and of the birth rate factor during the next decade (1960-1969). The average annual number of newborns during this period was 4,547,000 persons, while the total birth rate factor decreased below 20.0 per 1,000 population. It was registered as the lowest in the country in 1969--17.0 per 1,000 population.¹

The total birth rate factor increased slowly but continuously during subsequent years and reached 18.5 per 1,000 population in 1981.² This increase, which comprised 9.2 percent, was the result of an increase in the absolute number of newborns--456,400 additional births with respect to the number of newborns in 1981.

What does such a significant increase of the total birth rate factor mean: Was this a discontinuity in the tendency of the birth rate from a decrease to an increase? Or is this fact related to different causes outside the sphere of intensity of childbirth by women of different age?

In short, one must determine which circumstances (causes and factors) resulted in an absolute increase of the number of newborns and the accompanying increase of the total birth rate factor (from 17.0 per 1,000 in 1969 to 18.5 in 1981). The problem is complex and serious and requires extensive analysis and explanation.

The birth rate throughout the USSR as a whole is a very average value, having a considerable range of fluctuations in the profile of the union republics: for example, it was 14.0 per 1,000 in Latvia, 14.6 in the Ukraine, 16.0 in the RSFSR, 38.3 in Tadzhikistan, 34.9 in Uzbekistan and 34.3 in Turkmenia in 1981.

Each republic has its own characteristic features in the dynamic birth rate and, therefore, its principles can be studied by individual republics rather than by the average and better in profile of individual territorial units (ASSRs, krays, oblasts and cities).

At the same time, thorough analysis of the birth rate, conducted by V. A. Borisov and G. P. Kiseleva throughout the country as a whole, made it possible for the authors to conclude that "...analysis of rough birth rate factors having many serious deficiencies and of the indices that more adequately reflect the process of variation of childbirth intensity among the population of our country indicates a continuation of the trend toward a decrease."⁴

The characteristic features of the dynamic birth rate in the Russian Federation are considered in the given article. A reduction of the birth rate in the RSFSR, more significant than in other union republics, led to slowed rates of population increase and to a decrease of the fraction of the population of the Russian Federation in the total population of the country (Table 1).

Table 1. Fraction of RSFSR Population in Total Population of Country*

	Численность населения, тыс. (1)					
	1922 г.	1940 г.	1959 г.	1970 г.	1979 г.	1982 г.
(2) СССР	136 100	194 077	208 827	241 720	262 436	268 844
(3) РСФСР	87 755	110 098	117 534	130 079	137 551	140 017
(4) Население РСФСР по отношению к населению СССР, %	64,5	56,7	56,3	53,8	52,4	52,0

*Source: "Narodnoye khozyaystvo SSSR 1922-1982 gg. Yubileynyy statisticheskiy yezhegodnik" [The National Economy of the USSR 1922-1982. Anniversary Statistical Yearbook], Izdatel'stvo "Finansy i statistika", 1982, p 12.

Key:

1. Population, thousands
2. USSR
3. RSFSR
4. Population of RSFSR with respect to population of USSR, percent

However, an absolute increase of the population has been observed throughout the RSFSR as a whole until recently: the average annual increase during the past 5 years (1976-1981) was 900,000 persons. At the same time, the given circumstance cannot be the basis for complacency--the present population growth is determined by the characteristics of its age composition and primarily of women of childbearing age. These are transient phenomena and the true birth rate intensity on which the future growth of the population will depend reveals a tendency toward a decrease. Detailed analysis of the statistical material convincingly confirms this statement.

What is the total birth rate factor which increased in the RSFSR from 14.4 per 1,000 population in 1969 to 16.0 in 1981. As is known, this is the ratio of the total number of those born to the total population without regard to the fact that women of a specific age are giving birth to children and that their fraction in the total population may undergo serious changes due to demographic development. The total factor does not reflect the changes in the structure of women of childbearing age, during different periods of which there is a different birth rate intensity. For example, the birth rate intensity in the 20-24 age group is 34 times higher than in the 40-44 age group (157.6 compared to 4.6 per thousand women of the corresponding age).

The most sensitive and convincing factor that indicates a decrease of birth rate is a decrease in the fraction of mothers giving birth to three or more children. These mothers in the RSFSR are now related to the large family category. This definition is relative: families having three children are considered small in the Central Asian republics.

In 1960, when the birth rate factor in the RSFSR comprised 23.3 per 1,000 population, there were 30 percent of mothers who had given birth to three or more children. In 1970, the number of mothers who gave birth to three or more children comprised 20 percent at a lower birth rate factor (14.6 per 1,000 population), while in 1981, when the total factor increased to 16.0 per 1,000 population, the number of mothers with large families decreased to 12 percent. This fact in itself should caution one against hasty conclusions about an increase of the birth rate. The birth rate increases when the number of large families increases. The birth rate cannot increase with orientation toward a one- and two-child family, which is now observed in the RSFSR (especially in its central oblasts, where approximately 90 percent of the families are limited to either one or two children) (Table 2).

As can be seen, beginning with the mid-1970s, the total birth rate factor began an appreciable increase. During the 1950s, the average annual number of births in the RSFSR was on the order of 2,800,000 persons (2,782,000 in 1960)--the result of the increased postwar compensatory birth rate. These contingents began to enter child-bearing age during the early 1970s. Shifts of the birth rate toward a younger age occurred simultaneously--the result of transition to small families when they are limited by the birth of a single child after marriage at a young age, the birth of a second child becomes problematical and that of a third and subsequent children is of low probability. If one compares the population of females having the highest birth rate indices at the end of the 1960s (20-29 years), of which many were themselves born during the

Table 2. Dynamic Birthrate in RSFSR*

(1) Год	(2) Всего родившихся, тыс.	Показатель рождаемости на 1000 насе- ления (3)	% детей, родившихся (4) третьими и более позд- ними по счету
1960	2782	23,2	30
1965	1991	15,7	29
1970	1904	14,6	20
1975	2106	15,7	15
1980	2203	15,9	12
1981	2237	16,0	12

*"Narodnoye khozyaystvo RSFSR v 1981 g." [The National Economy of the RSFSR in 1981], Moscow, Izdatel'stvo "Finansy i statistika", 1982, p 12.

Key:

1. Year
2. Total births, thousands
3. Birthrate index per thousand population
4. Percent of children born third or more later by count

war, the numerically weakened generation and the number of women entering child-bearing age during the mid-1970s, then the main cause of the increase in the total birth rate factor becomes understandable--serious structural changes that occurred among women of child-bearing age: their fraction increased from 12.9 percent in 1970 to 20 percent in 1981 in the 20-29 age group.

Analysis of different statistical measures that characterize the dynamic birth rate during the past decade indicates that the total birth rate factor not only increased (by 10.3 percent) from 1970 through 1981, but the birth rate index, calculated as an average for females aged 15-49 years, also increased (by 13.5 percent--from 53.4 to 60.6 per 1,000 females of the corresponding age). However, even this fact cannot serve as a basis to state that the true birth rate increased during the period under consideration. Complex dynamic variation of the birth rate among different ages of females of child-bearing age is observed. The birth rate indices increased in the age group up to 20 years (by 15.4 percent) and from 20 to 24 years (by 10.7 percent) from seven 5-year age groups during the period 1969-1970 and 1980-1981. A decrease of the birth rate is then noted and the older the age, the more significant the decrease is. The fact that the birth rate index increased on the average for women aged from 15 to 49 years is the result of structural shifts among females of child-bearing age and a shift of high birth rate to younger age (Table 3).

The total birth rate index indicates that the birth rate intensity in the RSFSR did not increase as a whole during the period from 1970 through 1981, but actually decreased. It indicates the average number of children per female at the birth rate indices per existing age group. This value includes age group levels of birth rate and the number of females in each age group of child-bearing age. As can be seen from Table 3, the total birth rate index decreased by 4.3 percent (from 1.971 in 1969-1970 to 1.887 in 1980-1981).

Table 3. Different Statistical Characteristics of Dynamic Birth Rate in RSFSR*

(1)	Возраст, годы	1969—1970 гг.	1980—1981 гг.	(2) Процент изменений
(3)	До 20	28,3	43,6	+15,4
	20—24	146,9	157,6	+10,7
	25—29	107,4	102,0	-5,0
	30—34	69,3	52,0	-24,6
	35—39	32,2	18,8	-41,6
	40—44	9,0	4,6	-48,9
	45—49	1,1	0,4	-64,6
(4)	В среднем	53,4	60,6	+13,5
(5)	Суммарный показатель рождаемости	1,971	1,887	-4,3
(6)	Общий коэффициент рождаемости	14,5	16,0	+10,3

*VESTNIK STATISTIKI, No 12, 1971; No 11, 1982.

Key:

- | | |
|----------------------|----------------------------|
| 1. Age, years | 4. Average |
| 2. Percent of change | 5. Total birth rate index |
| 3. Up to | 6. Total birth rate factor |

Thus, we conclude that the birth rate in the RSFSR had a tendency to decrease during the past decade and this decrease approached the level at which renewal of the population is not provided. In order that future generations not be fewer than their own parents, it is necessary that the total birth rate index be in the range of 2.1-2.2. There should be an average of not less than 2.5 children for each marriage according to calculations (it is taken into account here that some part of those born do not live to marriage age, not all get married and some are infertile).

Most specialists and non-specialists cannot accept the seemingly paradoxical fact that the birth rate itself can decrease with an increase of the total birth rate factor and that this decrease has already passed the limits when the population of the RSFSR reproduces its future population by only 82 percent. It should be noted that demographic phenomena must be considered not only by those which we see today but also from the viewpoint of their future development, foreseeing their probable changes.

Whereas an absolute increase of the population is provided as a whole in the republic at present, a very low birth rate in some territories, especially in the central part of the RSFSR, is now incapable of providing an annual population increase. And this is not only a matter of the quantitative aspect of the problem: a low birth rate over 1-2 decades leads to a process of aging of the population, which in itself poses a number of serious problems of a socio-hygienic nature.

Statistical materials for Moscow can confirm this statement. The experience of Moscow, as the largest city, should be studied from all aspects without closing one's eyes to some negative aspects that accompany scientific and technical progress and an increase of large cities.

The variation of the population of Moscow by age groups is presented in Table 4.

Table 4. Population by Age Groups*

Возрастная группа, годы (1)	Численность населения (2)				
	(3) тыс.		% ко всему населению		
	1959 г.	1970 г.	1959 г.	1970 г.	1970/1959, %
0-9	797,3	799,0	13,0	11,3	100,2
10-15	456,3	538,4	7,5	7,6	118,2
16-19	369,9	418,5	6,1	5,9	113,1
20-24	598,5	631,9	9,9	9,0	105,6
25-29	553,3	443,4	9,2	6,3	80,1
30-34	622,5	684,4	10,3	9,7	109,9
35-39	407,7	531,2	6,8	7,5	130,3
40-44	390,0	643,8	6,5	9,1	165,1
45-49	493,8	455,6	8,1	6,5	92,3
50-54	416,2	349,2	6,9	5,0	83,9
55-59	331,4	489,2	5,5	6,9	147
60-69	395,9	699,8	6,5	9,9	176,8
70 лет и старше (5)	211,1	369,7	3,5	5,3	175,1
Все население (6)	6044,1	7061,0	100	100	116,8

*"Moskva v tsifrakh v 1971 g." [Moscow in Numbers in 1971], Moscow, Izdatel'stvo "Statistika", 1972, p 6.

Key:

- | | |
|---------------------|---------------------------------|
| 1. Age group, years | 4. Percent of entire population |
| 2. Population | 5. 70 years or older |
| 3. Thousands | 6. Entire population |

During the period under consideration, the population of young age (from 0 to 9 years) did not increase, whereas their fraction decreased from 13.2 to 11.3 percent in the total population, which is a consequence of a decrease of the birth rate during the preceding decade. This process also encompassed other territories of the RSFSR 1.5-2 decades later. This confirms the statement that the demographic processes which are typical for Moscow today will probably be universally distributed during the next two decades.

A decrease of the birth rate in Moscow considerably intensified the aging process of the population. According to the 1970 census, the fraction of persons aged 60 years or older was 15.2 percent. Compared to the 1959 census, the rates of increase of this contingent were more significant--by 76 percent, whereas the entire population of Moscow increased by 16.8 percent (Table 5).

Table 5. Birth Rate, Death Rate and Natural Increase of Moscow Population (per 1,000 persons)*

Год (1)	(2) Число родив- шихся	(3) Число умерших	(4) Естественный прирост
1960	14,5	7,6	6,9
1965	10,8	8,5	2,3
1970	11,8	9,5	2,3
1975	12,5	10,4	2,1
1980	13,6	11,7	1,9
1981	12,9	11,8	1,1

*"Moskva v tsifrakh (1971-1975)" [Moscow in Numbers (1971-1975)], Moscow, Izdatel'stvo "Statistika", 1976, p 7; "Moskva v tsifrakh v 1982 g.," Moscow, Izdatel'stvo "Finansy i statistika", 1983, p 7.

Key:

- | | |
|---------------------|---------------------|
| 1. Year | 3. Number of deaths |
| 2. Number of births | 4. Natural increase |

The aging process of the population became even more significant during the period after 1970. And this is understandable since the birth rate during this period was at a low level.

An increase of the total birth rate factor during the 1970s in the country and in its individual republics was determined by structural shifts in the population itself on the one hand and by a shift of its intensity to a younger age (from 25-29 years to 20-24 years) on the other hand. This is a temporary process and fluctuations of the total factor toward an increase or decrease do not reflect the real situation. All this was caused by deficiencies of such an index as the total factor rather than by true changes in the birth rate intensity, when the number of births for the entire population was counted without regard to the characteristics of its age and sex composition and also without regard to changes occurring in the birth rate intensity as a function of the mother's age.

Attention should be turned to the fact that the increase of the total death rate factor is now explained by the process of aging of the population rather than by an increase of its intensity in individual age-sex groups. And this is correct. At the same time, it is hard to understand why an increase of the total birth rate factor, which occurred during the 1970s and is continuing today, is universally explained by changes of its tendency toward an increase.

A decrease of the birth rate is inseparable from problems related to quantitative and qualitative growth of the population (one has in mind the process of aging of the population).

Either a decrease of the population or a very low increase is noted in those very territories where a low birth rate has been observed during the past decade (primarily in the central oblasts of the Russian Federation). The directions of migration flows cannot be taken into account here, but this fact in itself forces one to think both about our present and our future.

The birth rate among the rural population has continued to be higher until recently compared to the level in the cities. A decrease of the fraction of the rural population affects the decrease of the birth rate--its true level approaches that which was confirmed in large cities where the one- or two-child family is more widely distributed. It is known that a decrease of the birth rate proceeds in the direction of an increased level of education, an increase among the population of the fraction of persons involved primarily in mental labor and so on. The significance of the enumerated factors will increase even more as scientific and technical progress develops. So, there should not be a hopeless attitude toward problems of further dynamic birth rate. Party decisions about the need to conduct an effective demographic policy point us toward this.

The tasks: "Carry out an effective demographic policy, contribute to strengthening of the family as the most important cell of a socialist society and to creation of the best conditions for combining motherhood with active participation of females in labor and social activity"⁵ were posed at the 26th Party Congress.

An important benchmark in implementation of the demographic policy is the decree of the CPSU Central Committee and of the USSR Council of Ministers: "On measures to intensify state assistance to families having children," where a need to create more favorable conditions for an increase of the population is directly indicated. And an increase of the population can be provided when there are no more than three children in most families. As we have seen, two children per family is insufficient to renew the population of parent generations.

Forecasts indicate that, all things being equal, the total birth rate factor throughout the USSR will begin to increase if effective measures are not adopted and only due to the fact that a less numerous population will enter the 20-24 age group by 1985 compared to the case during the period 1976-1981.

A decrease of the total birth rate factor in the RSFSR should be expected, according to forecasts, beginning in 1984. This factor will hypothetically decrease to 14.0 per 1,000 population by 1990. One asks how the future situation can be explained if explanations of the current situation are based on invalid measurements and hypotheses?

Regardless, if the number of mothers with large families giving birth to three or more children comprises only 12 percent and if more than half of the births

are firstborn, there is no need to talk about expanded renewal of the population.

Thus, the characteristic feature of dynamic birth rate in the country during the 1970s was a tendency toward a decrease, despite an increase of such a measure as the total birth rate factors. It was this way up to 1982 on the basis of the given analysis. But the total birth rate factor increased immediately by .5 in 1982 compared to 1981--from 18.5 to 19.0 per 1,000.⁶ Such a significant increase during only 1 year was not observed throughout the last two decades. What is this--a discontinuity in the tendencies of the birth rate related to increased intensity? It is now difficult to answer this question, but one thing is certain: measures of the demographic policy directed toward providing an increase of the population, especially the Decree of the CPSU Central Committee and of the USSR Council of Ministers "Measures to intensify state assistance to families having children" (1981), have a positive influence on development of the population. One cannot rest on one's laurels and weaken attention toward these vitally important problems. One must recall the instructions of the June (1983) Plenary Session of the CPSU Central Committee: "The effectiveness of propaganda is determined primarily by those qualities such as scientific character, veracity and realistic nature. They of course require critical problematic materials and publications about our success. 'What is this success? Has it been proved? Are there stories or bragging here? Has success been achieved? How can the success be more widespread?' Thus V. I. Lenin posed the question (Polnoye sobraniye sochineniy, Vol 37, p 90). One should recall this because there is no end of braggarts."⁷

One should also analyze to what degree the given increase was caused by activation of the demographic policy and which of its elements are more effective. However, one should in no case weaken efforts directed toward an increase of the birth rate where it is dropped to an extremely low level. There are many still unutilized reserves here and one of them is the purposeful activity of health preservation. However, health organizations and institutions were still not yet actively included in solution of this problem until recently.

Problems on prevention of sick rate, beginning with early childhood, on an increase of longevity and the labor activity of people are posed in the system of measures to strengthen the health of the population. All this is undoubtedly important. But no less important are problems of pregnancy and birth rate, yet insufficient attention is being devoted to them.

Actually, the period of pregnancy and birth rate are components of the health of the population in its social understanding. The quantitative and qualitative characteristics of the population and of its tendency of development depends on these factors. Based on this, there is reason to state that public health care should participate actively in solution of problems of population that have become aggravated during the past few years, specifically, in conducting an effective demographic policy in the area of the birth rate.

What can and should be done in this direction? It is first necessary that health care organizations and institutions of all levels, medical workers, beginning with supervisors, the district medical officer and up to the nurse, be

thoroughly informed about the demographic situation in the country, republic, oblast, kray, city and rayon and that they know how and which agitation-propaganda work should be conducted among the population. This activity can be accomplished in combination with teachers, sociologists, psychologists and demographers. One of the main champions of the demographic policy along the line of health care should become the district medical officer. For qualified performance of these functions, he should carefully think and review his special training, which includes methods and forms of working in the district with young families and with those who are only planning to create families, to be competent and to give advice on problems of marital hygiene, marital-family relations and to prevent divorces. This new and exceptionally important function for health care requires the development of a special program of actions. However, there is no doubt that the district medical officer, armed with special knowledge, is now obligated to participate more actively in improvement of the demographic situation.

Health care is capable of having a positive effect on the dynamics of the birth rate by intensifying work in control of infertility, prevention of diseases that have a negative effect on the reproductive function of males and females and of controlling abortions.

The enumerated and many other measures related to the birth rate were always in the field of vision of health care. However, their effectiveness can and should be increased if they are carried out in the system of measures of the demographic policy. After all, a demographic policy, being a part of social policy, has a specific direction and the participation of health care workers in implementation of it is necessary, important and required.

FOOTNOTES

1. "Narodnoye khozyaystvo SSSR v 1972 g." [The National Economy of the USSR in 1972], Moscow, Izdatel'stvo "Statistika", 1973, p 47.
2. "Narodnoye khozyaystvo SSSR 1922-1982 gg." [The National Economy of the USSR 1922-1982], Moscow, Izdatel'stvo "Statistika", 1982, p 27.
3. "Narodnoye khozyaystvo v SSSR 1922-1982 gg," Moscow, Izdatel'stvo "Finansy i statistika", 1982, p 29.
4. "Problemy vosproizvodstva i migratsii naseleniya" [Problems of Reproduction and Migration of the Population], Moscow, AN SSSR, 1981, pp 21-22.
5. "Materialy XXVI s"yezda KPSS" [Materials of the 26th CPSU Congress], Moscow, Politizdat, 1981, p 136.
6. "SSSR v tsifrah v 1982 g." [The USSR in Numbers During 1982], Moscow, Izdatel'stvo "Finansy i statistika, 1983, p 18.
7. KOMMUNIST, No 9, 1983, p 27.

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PREVENTIVE DISPENSARY SYSTEM IN USSR

Moscow NOVOSTI DAILY REVIEW in English 9 Feb 84

[Interview with Sergey Burenkov, USSR Minister of Health, by E. Isakova; Moscow; date not specified]

[Text] [Question] The public health system has been entrusted with a radically new task--the annual medical examination (dispensarization) of the whole population in this country. What is the principal difference of the new approach?

[Answer] First of all, it is the scope of work to be done; the physicians will examine far more healthy people than before. Till recently the medical establishment in this country periodically examined just some groups of healthy people, including workers at various industrial enterprises, children under three years, pregnant women, and sportsmen. Besides, cardiovascular, oncological, rheumatic and other chronic patients were registered at the health centers.

The dispensary system for the entire population is a system of permanent and dynamic control of the health of each member of our society, either working or not, healthy or ill. The system is built on the principle that it is the physician who visits the patient rather than vice versa, i.e., the medical care is brought as close to the people as possible. Major attention will be given to the prevention of diseases.

[Question] What were the prerequisites for solving such a large problem as universal medical control?

[Answer] The material-and-technical base of our public health system has drastically improved during recent years. The number of hospital beds in this country is close to 3.5 million and over 36,500 outpatient and inpatient facilities render medical aid to the population. Almost 16 billion rubles were allocated last year from the state budget for developing the public health system. The number of medical specialists is also growing. The USSR has 1,100,000 physicians, and over three million nurses and assistants. Thus over 40 physicians and 111 nurses and assistants serve every 10,000 people in the USSR. The therapeutic

and pediatric districts are being broken down into smaller areas. The preventive and rehabilitation/treatment departments are being organized in the polyclinics to help partially relieve the inpatient centers; the network of the outpatient stations is expanding in the rural areas. The output of medicines, medical equipment and instruments and the fleet of ambulances are increasing. The quality and level of medical aid are improving.

Today about 115 million people have annual preventive check-ups and over 53 million patients suffering from the most widespread chronic diseases are taken care of by the dispensary system.

[Question] The facts show that the Soviet public health system has great tasks before it that cannot be achieved at one stroke. How will the achievement of these tasks begin, who will contribute and when may the first results be expected?

[Answer] The dispensary measures will be implemented in two stages. The first stage begins this year and will last for three or four years. First of all we have to register everyone. The internists in many inpatient and outpatient departments, dispensaries and health and midwifery centers are registering their future patients. To guard against extra work, the people cared for by special medical units and other branch health establishments must be excluded from the list. For instance, the railway workers will undergo dispensary treatment in the polyclinics and hospitals of the Ministry of Railways.

The purpose of the annual examination at this stage is the prophylaxis and detection of early symptoms of the cardiovascular, oncological, lung, endocrine and other diseases.

This stage will include the advantageous use of the available resources, the development of new medical equipment, automated systems for mass examination and control of the dispensary system.

As proved by calculations, the number of internists, obstetricians, gynecologists, dentists, and pediatricians now employed in the outpatient establishments is sufficient for carrying out the preventive examination of the urban population. Meanwhile the surgeons have to be withdrawn from hospitals.

In rural areas the problem is more complex. It cannot be solved without using the specialists from the rayon and city polyclinics and hospitals. They will be grouped in teams and provided with all the necessary equipment and transport facilities.

Nevertheless, at the first stage, i.e., up to 1988, in thinly populated areas we have to confine ourselves to examinations by internists, dentists, pediatricians and other specialists according to the symptoms.

To equalize the dispensary levels in the urban and rural areas, the number of graduates from the medical institutes sent to the country will soar in 1984-1987. The scope of dispensary examinations will even out all over this country only at the second stage.

Thus, the first results will appear in 1987 while the exhaustive information on the health of the entire population will be available by the end of this decade. The main point is that throughout these years the Soviet people will be under constant surveillance by physicians. All changes in their health will be recorded in special documents, and hence many diseases will be prevented or detected at the initial stage.

It is noteworthy that, after the population of the country is registered, it will be divided into groups: newborns, children of different ages, invalids, veterans of the Great Patriotic War, pregnant women, workers of industrial enterprises and other big establishments, students, farm workers and employees, pensioners, outpatients, etc. This will allow a rational distribution of work among the health care institutions. A personal medical card will be filed for each of us. All the aforementioned measures will precede the actual examination.

[Question] The instructions for carrying out the dispensary control have not yet been approved. Could we consider one of the possibilities? For instance, I am invited to visit the polyclinic on a certain day. What are the procedure and examination like?

[Answer] First of all, the nurse will measure your height, weight and chest size, check your vision and hearing, and make a preliminary estimate on your physical and psychological development. Then you will have blood, urine and other tests done. Next your arterial pressure will be checked; you will learn your blood group and rhesus factor, visit the x-ray and electrocardiogram rooms and so on. The compulsory scope of the examination depends on the age and registration group as well as on the results of the therapeutic examination. The internist is the main figure in the dispensary system. Everyone must visit him except the children, who will be attended by a pediatrician. It is also important to visit a dentist. Other specialists can be omitted if the patient has no special indications. The internist will send you to the necessary specialist according to your health, age and sex.

At the second stage of dispensary control, many age groups will be subjected, as a compulsory measure, to a more complete examination with the use of advanced and sophisticated equipment. The dispensary program will obviously undergo changes as experience is gained. For instance, the scope and type of examination may be changed according to climatic zone and to the risk factors characteristic of a particular region.

[Question] Are there any special features in the preventive examination carried out in the Russian Federation?

[Answer] Naturally. The Federation has a very large territory and a non-uniform population. Along with thickly populated industrial centers, we have a lot of small settlements, especially in the Far East and Far North. The inhabitants of such settlements must also be examined. The reindeer-breeders and herdsmen cannot abandon their herds, just as the polar explorers and weather forecasters cannot leave their stations. Therefore, the physicians have to visit them, so special transport vehicles and portable laboratory equipment for quick diagnoses will be needed. The dispensary control in far regions is rather a challenging problem. To solve it we have to establish a fleet of mobile outpatient care units.

CSO: 1852/04

COMPARATIVE USSR STATISTICS PERTAINING TO EDUCATION AND MEDICAL CARE

Moscow VESTNIK STATISTIKI in Russian No 10, Oct 83 pp 72-73

[Excerpt from article "Aids for Agiprop Workers"]

[Text] Equal opportunity to receive an education is what drastically distinguishes the USSR from western countries. In the USSR, the government's expenses per student per year are as follows: over 200 rubles in schools providing general education, over 750 rubles in secondary specialized educational establishments and over 1100 rubles at VUZ's. In capitalistic countries, the vast majority of students pay considerable sums for their education. Tuition payments are rising constantly. In the United States, for example, tuition costs increased by 28% in private higher educational institutions in 1981/82, as compared to the 1979/80 school year.

Number of students

Country	School year	Thousand	Students per 10,000 population
USSR	1982/83	5 315	196
Great Britain	1978/79	550	98
United States	1980/81	6 102	268
FRG	1981/82	643	108
France	1980/81	840	156
Japan	1980/81	1 723	148

Free medical care is an important social achievement of the USSR. The government assumes all expenses for the prevention and treatment of diseases. The state allocates more than 10 rubles for the upkeep of one patient per day.

Number of physicians in all specialties

Country	Year	Thou- sand	Physicians per 10,000 population
USSR	1982	1071	39.5
Great Britain	1977	102.2	18.3
United States	1980	547.3	24.0
FRG	1981	163.2	27.3
France	1979	95.7	17.9
Japan	1980	204.3	17.5

Number of hospital beds

Country	Year	Thou- sand	Beds per 10,000 population
USSR	1982	3443	127
Great Britain	1980	458	81.8
United States	1980	1317	57.8
FRG	1980	673	112.6
France	1978	544	102.1
Japan	1980	1319	113.0

The USSR is in first place in the world with regard to providing physicians and hospital beds for the public. In capitalistic countries, the public bears most of the expenses for treatment, and these expenses are growing due to the rise of high costs. In the United States, the cost of medical care increased by 24% in 1981-1982.

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10,657

CSO: 1840/288

VITAL WORK OF SHIRIN MAMEDOVNA TURAYEVA

Ashkhabad TURKMENSKAYA ISKRA in Russian, 21 Jan 84 p 4

/Article by G. Verpyleva: "Vocation"/

/Text/ "Children in a home bring joy to a home." This Turkmen proverb illustrates the meaning and goal of the vital work of Shirin Mamedovna Turayeva, head of the Republican Medical-Genetics Consultation Office of the Turkmen Scientific Research Institute of Health Protection For Mother and Child. Here, scientific and practical work is inseparably associated with this sector of medicine presently being introduced into the republic. Today, the science of genetics not only explains many phenomena but also proposes efficient methods to combat hereditary diseases in man.

The office door opens and the medical geneticist listens to the accounts of the medical misfortune of her patients. It is difficult for some to relate their problems to this person in a white gown with whom they are unacquainted. However, from the first moments of a visit, the patient senses the most sincere concern and tactfulness of Doctor Turayeva. You know there are still many secrets of the human organism which hide the cause of grave illnesses which sometimes strike children. Shirin Mamedovna does everything that is possible to help such children. Most of all, she tries to prevent a possible disease. A physician must pay very special attention and give delicate and, at the same time, persuasive advice in conducting premarital consultations with boys and girls and imparting, in them, a sense of parental responsibility to society. Now, Sh. Turayeva is supervising and participating actively in an important project aimed at creating medical-genetics consultation posts in rayons and oblasts of the republic.

One must have a true vocation and have the highest qualifications to be responsible for the fate and health of people. After completing school, where she won a gold medal, she had no doubt about her choice of a career. Medicine was the only choice. Her labor biography began with a diploma of "distinction" from the Turkmen State Medical Institute. She was a surgeon working on the most complex matter of correcting genetic defects by surgical methods. The medical-genetics consultation room of the institute, being the center of the medical-genetics service in the republic, was the creation, to a large extent, of the first physician of the republic to specialize in medical-genetics. Specialists of the institute not only perform practical treatment but also attempt to look into the future of this science and hasten the victory over insidious afflictions. The cytogenetics and biochemical

genetics laboratories are equipped with the most modern equipment and methods of express diagnosis are being introduced. Here, in the institute center, the physicians counsel patients on how to create the environment required to suppress and neutralize a hereditary predisposition to diseases and a special prophylactic diet is arranged. Their careful attention to the patient, their sensitiveness and optimism are no less important.

Shirin Mamedovna Turayeva recently defended her Candidate's dissertation after completing her graduate work at the USSR Academy of Medical Sciences Institute of Medical Genetics.

Once again the office door opens. This time a woman enters with a huge bouquet of flowers in her hands and a happy smile on her face. One of the grateful mothers has come to thank the doctor and to say that her first born was born healthy. There can be no greater reward than this for Shirin Mamedovna, who knows so well that "children in the home bring joy to the home."

2791

CSO: 1840/347

BRIEFS

GROWTH OF TRADE-UNION RESORTS--This year, trade-union health resorts will admit 10,193,000 people for treatment and rest. About 200 million rubles have been assigned for development of this service. Last year, units that can house an additional 11,000 people have been built at sanatoriums and rest homes. These facts and figures were cited by I. I. Kozlov, chairman of the Central Council for Resort Management, at a meeting of the council that was held on 26 January. He noted that the network of health facilities for married couples is being expanded, and 36 of them receive parents with children for treatment. The plans for starting up the new resort complexes are very heavy. In 2 years of the current Five-Year Plan, units with accommodations for 34,000 people will have to be erected. Already this year, there are plans to complete construction of sanatoriums at the resorts of Belokurikha, Yessentuki, Gelendzhik, in Ivanovo and Penza oblasts, Chuvash ASSR and other parts of the country rich in natural factors. [V. Nikolayev] [Text] [Moscow IZVESTIYA in Russian 27 Jan 84 p 6] 10,657

CSO 1810/288

NOISE EFFECT ON INFORMATION PROCESSING RELATED TO CHARACTERISTICS OF
NEURODYNAMICS

Moscow GIGIYENA I SANITARIYA in Russian No 2, Feb 84
(manuscript received 19 Sep 83) pp 16-19

OLESHKEVICH, L. A. and SIDORENKO, Zh. G. Kiev Scientific Research Institute
of General and Communal Hygiene imeni A. N. Marzeyev

[Abstract] The aim of this work was to study effects of noise on intellectual processes of subjects varying in their nervous system stability and mobility. Two series of experiments were performed on 28 volunteer students aged 18-26 years: determination of background without noise distortion and evaluation of information processing while exposed to 80 dB A noise for 1 hr. Subjects with strong nervous system showed insignificant changes in their ability to process information data. Those with weak nervous system exhibited uniformly a statistically significant negative effect after a 1-hr test. The following mechanism was proposed for this phenomenon: the perceived noise causes excitation at all points of hearing analyzer, including the hearing portion of the cortex. This effect may be then induced upon ocular, motor and other segments of the cortex, including the perceptive mnemonic and thinking processes. References: 10 (Russian).
[345-7813]

METHODOLOGICAL APPROACHES TO STUDIES OF BIOLOGICAL ACTIVITY OF RESIDENTIAL
CHEMICAL MATERIALS CONSIDERING VARIOUS ROUTES OF THEIR PENETRATION INTO BODY

Moscow GIGIYENA I SANITARIYA in Russian No 2, Feb 84
(manuscript received 6 Oct 83) pp 51-53

RAPOPORT, K. A., MARKOVA, Z. S., PYLEVA, Z. A. and MITROFANOVA, N. G.

[Abstract] Wide use of chemicals in residential applications makes it imperative to evaluate their effects, especially in cases where extended skin exposures could be involved. In particular, this study concerned surface-active agents: synthetic soaps and cleaning agents. Analysis of their components showed that even with relatively low individual toxicity, some of them exhibited definite toxic effects upon chronic exposure, including allergic reactions. The most biologically active components were identified for further evaluation: sulfonal from n-paraffins, syntamide-5, syntonal DS-10, triethanolamine, etc. References 10 (Russian).
[345-7813]

CHARACTERISTICS OF FABRIC PROPERTIES FOR SPECIAL CLOTHING DESIGNED TO PROTECT INDIVIDUALS FROM OPTICAL IRRADIATION BY INDUSTRIAL SOURCES

Moscow GIGIYENA I SANITARIYA in Russian No 2, Feb 84
(manuscript received 18 Jul 83) pp 35-37

GVOZDENKO, L. A., PRIMAK, V. N., SHISHKINA, N. S., BOGOMOLOVA, L. S., PSUHKOVSKAYA, G. A. and KOSOV, A. V., Kiev Scientific Research Institute of Labor Hygiene and Occupational Diseases; Institute of Biophysics, USSR Academy of Sciences, Pushchino; Institute of Physics, UkSSR Academy of Sciences, Kiev

[Abstract] Twenty-nine different fabrics used in preparation of protective clothing were studied in the field of optical irradiation (OI), determining the degree of energy permeability. The range of OI extended from UV (300-400 nm) through the visible spectrum to IR frequency (2000-10,000 nm). Almost all the fabrics tested showed a degree of permeability which increased with increased wavelength of the monochromatic OI. Prolonged irradiation of fabrics raised their temperature and caused them to act as secondary irradiation sources. References 5: 4 Russian, 1 Western. [345-7813]

UDC 614.2(-202)

CURRENT TENDENCIES IN DEVELOPMENT OF OUTPATIENT CARE FOR RURAL POPULATION

Minsk ZDRAVOOKHRANENIYE BELORUSSII in Russian No 12, Dec 83
(manuscript received 13 Sep 83) pp 3-5

Candidate of Medical Sciences VAL'CHUK, E. A., Chair of Social Hygiene and Organization of Public Health (Director--Candidate of Medical Sciences A. V. Manulik) at the Belorussian Institute for the Advanced Training of Physicians

[Abstract] One of the possible methods of developing social-political aspects of the community is based on obliterating the differences between the city and country, including such aspects as medical care. From a historical perspective, development of medical assistance to rural population was oriented in four directions: rural medical unit, rayon hospitals, oblast health centers including special care units and republic specialized centers. To bring the rural population closer to the care available to municipal dwellers, it has been proposed to extend qualified medical help toward the village by providing more specialized medical care in the country via rural polyclinics with a prescribed number of specialists for a given population density. References 7 (Russian). [372-7813]

IMPROVEMENTS IN PROFESSIONALISM AND EDUCATION OF MEDICAL STAFF OF EMERGENCY SERVICE IN MINSK

Minsk ZDRAVOOKHRANENIYE BELORUSSII in Russian No 1, Jan 84
(manuscript received 15 Jun 83) pp 12-14

BARANOV, V. G., Minsk Municipal Clinical Hospital for Emergency Service
(Chief Physician-Distinguished Physician of BSSR I.S. Kudlach)

[Abstract] Minsk Municipal Hospital for Emergency Service [skoraya pomoshch] is one of the largest medical institutions in the city, employing 426 physicians and 1065 technicians. Special attention is paid to improvements in their professional levels. The physicians attend continued education courses, conferences and specialized meetings. Weekly seminars are conducted on diagnostic and surgical techniques, trauma and toxic syndromes. Attention is given to political education and competition with other institutes. Considerable care is given to young medical personnel freshly arriving at the hospital.
[367-7813]

EXPERIENCE GAINED IN WORKING WITH FOREIGN STUDENTS AT CHAIR OF BIOORGANIC AND BIOLOGICAL CHEMISTRY

Minsk ZDRAVOOKHRANENIYE BELORUSSII in Russian No 1, Jan 84
(manuscript received 28 Mar 83) pp 59-61

KUKHTA, V. K. and KIL'CHEVSKAYA, M. A., Chair of Bioorganic and Biological Chemistry (Director--professor V. K. Kukhta) Minsk Medical Institute

[Abstract] Experience gained in working with foreign students is reported. Educational process consists basically of two aspects: instruction and training. With foreign students extensive individual contacts are maintained because in large groups they experience language difficulties. The chair of Russian language is especially helpful in developing courses in Russian language based on technical expressions relating to the subject matter studied. Stress is laid on scientific research and educational research work of students. Chair personnel are required to improve their qualifications by taking special courses preparing them for work with foreign students. References: 3 (Russian).
[367-7813]

INCIDENCE OF IRON DEFICIENCY ANEMIA IN BASHKIRIA

Moscow GEMATOLOGIYA I TRANSFUZIOLOGIYA in Russian No 6, Jun 83
(manuscript received 21 Sep 82) pp 20-22

NIKULICHEVA, V. I. and KHUSAINOVA, F.S., professor, Bashkir Medical Institute; Republic Clinical Hospital imeni G. G. Kuvatov, Ufa

[Abstract] An epidemiologic study was conducted on the incidence of iron deficiency anemia in Bashkiria in relation to nationality, socioeconomic status, climate, and sex. Evaluation of 4584 individuals showed that the incidence in urban areas ranged from 6.58 to 38% (18.5-42.4% for females, 0.6-15.3% for males) and from 6.72-26.4% in the rural areas (6.72-43.7% for women, 0 to 10% for men). There was no correlation between the incidence of this disorder and child-bearing age in women, and between the incidence of the disorder and hemorrhagic diseases in the male population. References 1 (Russian).
[359-12172]

UDC 614.2(s)+614.21

ECONOMIC INDICATORS OF URBAN POLYCLINICS

Kiev VRACHEBNOYE DELO in Russian No 8, Aug 83 pp 1-4

SNEGUR, Ye. A., ZADOROZHNYI, V. F. and NEKOVAL', V. T., Department of Social Hygiene and Organization of Public Health; Scientific Research Institute of General and Communal Hygiene; Chair of Planning, Institute of National Economy imeni D. S. Korotchenko; Public Health Administration, City Executive Committee, Kiev

[Abstract] Economic indicators were evaluated at six polyclinics in Kiev in the period 1978-1980 to determine cost effectiveness and the effects of more rational distribution of caseloads and other operational parameters. Each Polyclinic serves 33,000 to 80,400 people and operates on a two-shift work schedule. Analysis of the economic and financial data showed that most of the costs of operating the polyclinics went for salaries (74.0-89.9%), followed by the cost of maintenance and office expenses (7.8-12.2%), and for acquisition of drugs, bandages, etc. (7.8-10.4%). Costs of patient visits ran from 82 kopecks, for a mean of 0.96 rubles per visit. Considerable variations in the costs of operating the various medical subspecialty departments was evident among the polyclinics, and in the costs of a single therapeutic or diagnostic procedure or test.

It became evident that the more efficiently organized clinics that accomplished more in a single visit had lower overall costs, an observation that substantiates the connection between superior medical service and greater cost effectiveness and which should be of interest to the head physicians.

[351-12172]

UDC 362.172+362.7

HEALTH PROTECTION OF CHILDREN AND MOTHERS--BASIS FOR IMPROVEMENT IN PUBLIC HEALTH

Moscow ZDRAVOOKRANENIYE ROSSIYSKOY FEDERATSII in Russian No 11, Nov 82
(manuscript received 5 Jul 83) pp 6-11

TROFIMOV, V. V., candidate of medical sciences, Chair of Social Hygiene and Organization of Public Health (Director--candidate of medical sciences V. V. Trofimov, Faculty for the Advanced Training of Physicians, Moscow Medical Stomatologic Institute

[Abstract] Under the motto "Health for everybody in the year 2000: the countdown has begun" the attention is directed towards health problems of mothers and children. In recent years considerable improvement was noted in the Russian Federation in areas of birth assistance, consultations to women, polyclinics and special hospitals for children, etc. One of the aspects which reflects directly on women's health, and which needs to be improved, concerns the working conditions, especially those of the expectant mothers. Physical preparation for the delivery needs considerable improvement. The level of infectious diseases in obstetrical hospitals is too high: improvements are needed in construction of new units, in nursing support and in closer staff supervision. Even more improvements are needed in programs aimed at preschool and school-age children. There the diseases of respiratory and intestinal tract exceed the republic's average by a factor of 1.5. Many of these cases are missed during regular medical examinations. Provisions for hot noon meals should improve the health status of school children. Another measure concerns adequate physical training. Lack of proper furniture and lighting have serious effects on the eyesight of students. Transfers from school to school should be avoided.

[349-7813]

CHILDREN'S VIABILITY DURING THEIR FIRST YEAR OF LIFE AS A FUNCTION OF
ADAPTATION OF MOTHERS

Moscow ZDRAVOOKHRANENIYE ROSSIYSKOY FEDERATSII in Russian No 11, Nov 83
(manuscript received 1 Feb 83) pp 18-20

BABENKO, A. I., Scientific Research Institute of Complex Problems of
Hygiene and Occupational Diseases, Siberian Department, USSR Academy of
Medical Sciences, Novokuznetsk

[Abstract] Death rates among children during their first year were analyzed in five groups of women: 1--those who lived for less than 3 years in Novokuznetsk; 2--those with 3-5 years residence; 3--women with 6-9 years in Novokuznetsk; 4--those with 10 years of residence and more and 5--natives of Novokuznetsk. It was shown that the lowest death rate was observed in group 5, followed by group 4 and then increasing in groups 1-3. Death causes were endogenous (prenatal and delivery pathology) and exogenous (respiratory and septic diseases). In both cases they were more pronounced among children of women in the 1-3 groups studied. Death rates among boys exceeded the girls' rates by a factor of 1.5.
[349-7813]

UDC 613.89:614.1:312.1

SOME RESULTS OF DYNAMIC MEDICAL CARE OF YOUNG FAMILIES

Moscow ZDRAVOOKHRANENIYE ROSSIYSKOY FEDERATSII in Russian No 11, Nov 83
(manuscript received 1 Apr 83) pp 27-29

CHUSHKOVA, I. S., All-Union Scientific Research Center of Health Protection of Mothers and Children USSR Ministry of Health

[Abstract] Two hundred young families were studied for a period of 5 years by a cohort method. The study group was selected by the following criteria: less than 30 years old, first marriage for both partners, the marriages lasted at least five years, living in Moscow and the marriage was registered in Moscow in one year. The control group (500 couples) was selected by the same criteria, but they were examined only once during their 5th year of marriage. Most of the marriages occurred during the 20-24th year of age, the couples had a rather high level of education which was completed before the marriage; only an insignificant increase was observed in the education level during the

married life. During the first 5 years of marriage 95% of women became pregnant: 64% of them had one pregnancy, 18.5%--two and 12.5% three and more. An inverse relationship was observed between the length of marriage and the number of pregnancies. Most of the indices studied showed little difference between the study and control groups. It was concluded that dynamic medical monitoring of young couples led to decreased abortions and lower incidence of gynecologic diseases. [349-7813]

UDC 61:62-50

CURRENT PROBLEMS AND SOLUTIONS IN MEDICAL CYBERNETICS

Tashkent MEDITSINSKIY ZHURNAL UZBEKISTANA in Russian No 7, Jul 83
(manuscript received 17 Feb 83) pp 3-6

AGZAMKHODZHAYEV, S. M., KADYROV, Kh. K. YANBAYEVA, T. A. BOTIROV, D., SHERBAYEV, N. and RUZIKULOV, I. S., Chair of Surgical Diseases, Sanitary-Hygiene Faculty and Chairs of Biophysics, Medical Electronics and Cybernetics, Tashkent Order of the Red Banner of Labor Medical Institute

[Abstract] Decisions expressed in the program of the 26th Plenum of the CPSU have led to the formulation of plans for expanding the use of the cybernetic approach in medicine and medical services in the USSR. The basic features of the various plans call for establishing an extensive computer network to provide support services in the various areas of public health, clinical medicine, and administration, and the development of mathematical models and algorithms for solving various problems. Of particular importance is the recruitment of highly qualified and motivated personnel and the creation of optimum work conditions. [368-12172]

UDC 616-006-086

NEW ADMINISTRATIVE FORMS OF MASS PROPHYLACTIC SCREENING

Tashkent MEDITSINSKIY ZHURNAL UZBEKISTANA in Russian No 7, Jul 83
(manuscript received 11 Jun 82) pp 7-9

KHALIFAYEV, S. M. and GAZIYEV, T. G., Scientific Research Institute of Oncology and Radiology, Uzbek SSR Ministry of Health

[Abstract] An administrative device has been introduced at the Scientific Research Institute of Oncology and Radiology of the Uzbek SSR Ministry of Health to facilitate the work of medical screening, which consists of caseload pre-selection on the basis of a questionnaire. This is

particularly applicable to the over-forty group, and contains questions designed to elicit information pertaining to various organs and systems, involving a "yes" or "no" answer. In addition, provision is made for entering any medically relevant information not anticipated by the questionnaire. This approach was found effective in decreasing the patient load that actually had to be seen by physicians, and in narrowing the screening down to the subjects most at risk.
[368-12172]

UDC 61(071)

HANDS-ON PRACTICE IN THE TRAINING OF HIGHLY QUALIFIED MEDICAL SPECIALISTS

Tashkent MEDITSINSKIY ZHURNAL UZBEKISTANA in Russian No 7, Jul 83
(manuscript received 5 Apr 82) pp 51-54

MUMINOV, A. I. and ATABAYEV, Sh. T., Tashkent Order of the Red Banner of Labor Medical Institute

[Abstract] The philosophy of hands-on training in medical education is outlined and supplemented with actual experience as practiced at the Tashkent Order of the Red Banner of Labor Medical Institute. Outlines are presented of rotations in the different programs, ranging from purely clinical assignments to epidemiology. The full success of the program is dependent, of course, on the active and willing participation of all concerned parties, the creation of a professional atmosphere at the work place, and the wide spectrum of experiences made available to the students. Of the utmost importance in the training of future medical specialists is firm grounding in the fundamentals of Marxism-Leninism and political sophistication gained through appropriate lectures, self-study, and activity in various sociopolitical settings.
[368-12172]

616-092:612.013.7-06:612.014.482-08(048.8)

EFFECTS OF IONIZING RADIATION ON HORMONAL REGULATION OF ENERGY METABOLISM

Moscow MEDITSINSKAYA RADIOLOGIYA in Russian No 12, Dec 83
(manuscript received 27 Oct 82) pp 40-51

BARABOY, V. A. and SUKTOKOVOY, D. A., Kiev Scientific Research Radiological and Oncological Institute, Ukrainian SSR Ministry of Health

[Abstract] An overview is provided of the mechanisms of radiation damage to energy and nucleotide metabolism, which is manifested in uncoupling of oxidative phosphorylation and depression of ATP stores. Biochemical studies have implicated the key role of glucocorticoids as a mediator in ionizing radiation-induced depression of ATP, and the importance of insulin in counteracting such effects. In fact, administration of exogenous insulin has been shown both to depress plasma glucocorticoid levels and lead to normalization of energy and nucleotide metabolism when given in optimum doses (2 U/kg in the rat). Such studies also underline the role of the adrenal cortex in the pathogenesis of radiation damage, and the role of insulin in adaptation to adverse physiological situations. References 119: 2 Ukrainian, 90 Russian, 27 Western. [362-12172]

UDC 616.8-091.94-02:578.833.1]-07

COMPARATIVE STUDY OF GLIAL CELL LINES INFECTED WITH ALPHA-, FLAVI- AND PICORNAVIRUSES

Moscow VESTNIK AKADEMII MEDITSINSKIKH NAUK SSR in Russian No 1, Jan 84
(manuscript received 20 May 83) pp 40-45

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[Abstract] Viral infections of the central nervous system seldom show any profound pathology of the glial elements, an observation which led to an investigation of the susceptibility of such elements to alpha-, flavi- and picornaviruses. Mouse glioblastoma cell line (EPNT-5) and rat neurinoma cell line (NK) were infected with Sindbis virus (strain EgAr 339), tick-borne encephalitis virus (BCM-383), or Coxsackie virus A7 (AB-KX), with observation of the cell lines for CPE and viral production. Infections of EPNT-5 and NK cells with the viruses in question led to the development of chronic infections with limited, if any, CPE and some differences between the rat and mouse cells. The NK cells, for example, were less susceptible to the Sindbis virus than the EPNT-5 cells which showed CPE earlier, while both lines showed similar susceptibility to the tick-borne encephalitis virus. Infection of the NK cells with the Coxsackie virus also yielded serologic evidence of virus production without CPE. Consequently, these observations indicate that glial elements are susceptible to infection by the viral agents tested, but that the infection tends to be chronic and persistent with virus release rather than fulminating with frank CPE. These observations may reflect the reparative and regenerative potentials of the glial cells which render them less susceptible to destruction than neurons. Figures 3; references 20: 15 Russian, 5 Western.
[380-12172]

UDC 594.1 Mactra: 591.3

EMBRYONAL DEVELOPMENT OF BIVALVE MACTRA CHINENSIS (CARDIIDA, MACTRIDAE)

Moscow ZOOLOGICHESKIY ZHURNAL in Russian No 8, Aug 83
(manuscript received 2 Apr 82) pp 1162-1169

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[Abstract] Results are presented from a study of embryonal development in the marine bivalve *Mactra chinensis* Philippi 1846 from the egg to the veliger stage, using sexually mature individuals caught in the eastern Sea of Japan in 1981 and 1982. Fertilization and development took place in vitro at a temperature of 20-23°C. Mature oocytes measure 50-60 micrometers and contain a large nucleus with a well-defined nucleolus. Cleavage of the dorsal blastomere (D-blastomere) is complete toward the animal pole. The first and second somatoblasts (X_d and X_s cells) descending from the D-blastomere give rise to the shell gland and mesodermal cells respectively. A stereoblastula with cilia forms as the result of cleavage, with the cavity filled by the X_d and X_s cells. The vegetal pole is occupied by the future entoderm. The developing larva changes shape to become ovoid and develops an invaginated shell gland. At this stage the larva swims in straight lines about its own axis. After evagination of the shell a trophophore forms and shell development starts on the dorsal side close to the posterior, with early development of two distinct thickened centers. The veliger forms 16-18 hours after the start of development. Findings are discussed and compared with embryonal development in primitive Protobranchia and subsaline bivalves. Figures 3; references 7 (Western).
[1001-9642]

MORPHOLOGY OF RADULAR TEETH IN TURRIDAE (GASTROPODA, TOXOGLOSSA) IN NORTH-WEST PART OF PACIFIC OCEAN

Moscow ZOOLOGICHESKIY ZHURNAL in Russian No 11, Nov 83
(manuscript received 12 Jan 82) pp 1621-1628

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[Abstract] The scanning electron microscope was used to study the morphology of the radular apparatus in eight species of Turridae from three families found in the northwest Pacific: *Aforia circinata* (Dall, 1871), *Antiplanes yessoensis* Dall 1925 from the subfamily Turriculinae, *Suavodrillia kennikotti* (Dall, 1871) from the subfamily Borsoniinae, *Oenopota harpa* (Dall, 1885), *O. nobilis* (Moeller, 1842), var. *O. albrechti* (Krause, 1885), *O. schantarica* (Middendorff, 1849) and *O. erosa* (Schrenck, 1983) from the subfamily Mangelliinae. Details are given of the collection and preparation of specimens. Functionally, the radular apparatus fell into one of two types; the slicing radula (*Aforia*, *Antiplanes*) and the "hypodermic" radula (*Oenopota*, *Suavodrillia*), with vestigial membrane. Within the two types, variation in the radular teeth is great in terms of size and proportion and their relationship to the edge, whose morphology is quite similar. Comparisons and correlations are made between the sizes of the radular teeth, shell, and poison glands. The relative sizes of the toxoglossal Turridae studied are similar to those in the genus *Conus*. Figures 3; references 10 (Western). [1000-9642]

PHYSIOLOGICAL FEATURES OF PULMONATE LAND MOLLUSCS IN PERIODS OF HIBERNATION AND ACTIVITY

Moscow ZOOLOGICHESKIY ZHURNAL in Russian No 11, Nov 83
(manuscript received 8 Jul 82) pp 1629-1634

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[Abstract] Field and laboratory studies were conducted in order to elucidate physiological changes taking place in *Helix pomatia*, *Helix albens* and *Caucasotachea atrolabiata* during active periods and hibernation. Experimental specimens were collected from areas on the Baltic Sea littoral, the environs of Novorossiysk and the settlement of Alekseyevskoye near Novorossiysk at various times of the year. Determinations were made of hemolymph and hemocyanin and total protein and calcium

during active periods and hibernation. Laboratory methods are described. Changes in body weight during hibernation and the weight of internal organs during active periods were also determined in *H. pomatia* and *H. albescens*. Results of biochemical studies are shown in tabular form. Hemolymph buffer substances increase in all three species studied during hibernation, evidently in response to nonelimination of protein metabolism end products in order to maintain the balance of the internal medium. Calcium content almost doubles during hibernation, and hemocyanin increases by a factor of 3. The mechanisms of the physiological changes observed are discussed. References 10: 4 Russian, 6 Western.
[1000-9642]

UDC 594.382 Bradybaenidae: 577.322

COMPARISON OF ELECTROPHORETIC SPECTRA OF MYOGENS IN REPRESENTATIVES OF
LAND SNAILS OF FAMILY BRADYBAENIDAE

Moscow ZOOLOGICHESKIY ZHURNAL in Russian No 11, Nov 83
(manuscript received 24 May 82) pp 1736-1740

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[Abstract] Results are presented from a comparative study of myogens in four questionable species of Bradybaenidae (*Bradybaena plectotropis*, *B. stschukini*, *B. phaeozona* and *B. almaatini*) in order to clarify their taxonomic position. The method used was polyacrylamide gel electrophoresis. Material was first sorted by doing a statistical analysis of morphological features, namely, width of shell, width of penultimate whorl, height of shell, height of body whorl, and the corresponding relationships between the features. Definite differences were found in the entire range of the electrophoretic spectra for myogens present in specimens. The results showed that the mean indexes for myogenic similarity in two series of electrophoretograms were 54.90 and 52.80 percent, which, according to available data, are typical for different species of the same genus. By statistical analysis, material fell into two groups: *B. plectotropis*--*B. stschukini* and *B. phaeozona*--*B. almaatini*. Within each group no statistically reliable differences were found for the mean indexes of similarity. The findings indicate that the Bradybaenidae studied represent four independent species. In general, the taxonomic structure of the family Bradybaenidae needs further clarification. Figures 1; references 6: 4 Russian, 2 Western.
[1000-9642]

DIFFERENCES IN THERMAL STABILITY OF MUSCLE TISSUE OF MOLLUSCS (CHONDRUS BIDENS) HETEROZYGOUS AND HOMOZYGOUS FOR SHELL PATTERN

Leningrad TSITOLOGIYA in Russian No 7, Jul 83
(manuscript received 3 Apr 82) pp 838-841

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[Abstract] Experiments were conducted on the thermal stability of muscles of the terrestrial mollusc Chondrus bidens, using specimens homo- and heterozygous for shell pattern. Thermal stability was evaluated by immersion of muscle in Ringer's solution at 40°C and measurement of the time required for loss of contractile response to sinusoidal electrical stimulation. Studies conducted in summertime and in winter (during hibernation) showed that the heterozygous specimens possessed greater thermal stability at all seasons. However, on interruption of hibernation by temperature elevation the difference in thermal susceptibility disappeared, indicating that the normally observed difference is not predicated per se on shell morphology, but to a muscular mechanism responsive to temperature factors. Figures 1; references 11 (Russian).
[1006-12172]

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